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THE NEW INTERNATIONAL YEAR BOOK

A COMPENDIUM OF THE WORLD'S PROGRESS

FOR THE YEAR

1917

EDITOR
FRANK MOORE COLBY, M.A.

ASSOCIATE EDITOR
ALLEN LEON CHURCHILL

NEW YORK
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1918

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PREFACE

The contents of the present volume of the NEW INTERNATIONAL YEAR BOOK, the eleventh in the new series which began with the volume for 1907, are modified in many important respects by the entry of the United States into the war. Besides the account of that event which will be found in the articles WAR OF THE NATIONS and UNITED STATES AND THE WAR there are comprehensive accounts of the effect of the war in all fields of industrial, agricultural, educational, and economic activity. The article on WAR OF THE NATIONS is carried on along the lines that were laid down by Professor Carlton Hayes in preceding issues, containing as before a brief prefatory summary of events down to the beginning of the year. In the articles AGRICULTURE, AGRICULTURAL LEGISLATION, FOOD CONTROL, FOOD AND NUTRITION the various problems and developments in food production and distribution are discussed in detail. The effect of the war on industry is recounted in such articles as CHEMISTRY (INDUSTRIAL), SHIPPING, SHIPBUILDING, RAILWAYS, and other titles that will readily occur to the reader; and the financial, economic, and social effects are treated in FINANCIAL REVIEW, TAXATION, TARIFF, LABOR, LABOR LEGISLATION, TRADE UNIONS, STRIKES, INSURANCE, UNEMPLOYMENT, etc. Matters of specifically military and naval interest are discussed as before under such headings as MILITARY PROGRESS, NAVAL PROGRESS, BATTLESHIPS, SUBMARINES, AËRONAUTICS, etc. Other articles that may be mentioned as dealing with striking features of the year are RUSSIA, which contains an account of the RUSSIAN REVOLUTION, the articles on each of the countries at war, the articles INTERNATIONAL ARBITRATION AND PEACE, MILITARY SURGERY, HALIFAX DISASTER, UKRAINE, SUBMARINE OPERATIONS, and LIQUOR REGULATION. Aside from the necessary changes in proportion resulting from this crisis in our history the present volume retains all the essential features of preceding issues; that is to say, being designed as an encyclopædia of the year it includes many classes of information not to be found in other annual volumes. For example among the departments not included or less fully treated in other such works are BIOGRAPHY, AGRICULTURE, POLITICAL HISTORY at home and abroad, SOCIETIES, and RELIGIOUS BODIES. Its large size and the exclusion of matters not pertaining to the year or not derived from the latest available information makes this possible.

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NOTE: Cross references in SMALL CAPITALS indicate that the allusion is to a separate article; cross references in *italics* denote that the reference is to a subdivision of a main article. A cross reference in *italics*, standing alone in an article, carries the reference to another subdivision of the same article. The letters q. v. (*quod vide*=Latin "which see") in parentheses following a word, indicate that the subject is treated under its own name elsewhere in the volume.

NOTE: In certain tables in this work it will be found, by addition, that the totals do not correspond to the sum of the items. This is the result of the omission or inclusion of certain small items which are not mentioned in the table, but are included in the totals. This is a usage frequently employed in the compilation of government statistics, from which sources the greater number of the tables in the YEAR BOOK are taken.

THE NEW INTERNATIONAL YEAR BOOK

ABRAMOVITZ, JACOB SHOLOM. A Jewish author, often called the grandfather of Yiddish Literature, died December 14, 1917, at Odessa, Russia. He was born in the Government of Minsk, Lithuania, Russia, December 28, 1835, and was educated principally by his father. At an early age he attained a remarkable knowledge of the Talmud and the Bible. His first literary effort, *The Proper Verdict*, was a criticism of the Jewish literature of his day, and was published in 1860. His object was to show that his co-religionists did not live up to their privileges and were lacking in aggressiveness. He traveled extensively about his native country, keenly studying Jewish life, with which his novels largely dealt. He also wrote much on politics and history, and his outspoken critcism of public men and their work made him feared in high places. But his main object was to instill courage and initiative into the Jews. Among his numerous works, besides *The Proper Verdict*, were: *The Travels of Benjamin the Third*, a study of the non-progressive spirit of the Jew; *The Horse*, an attack on the Russian government; *The Book of Revivals; Solomon;* and *The Son of Herman*. With the death of Abramovitz there passed the last of the great Russian Jewish writers of the older school.

ABYSSINIA. A country of northern Africa, occupying a highland region southwest of the Red Sea. The country is made up of a number of states, the chief of which are Tigré in the north, Amhara in the west and centre, and Shoa in the south.

The total area of Abyssinia and its dependencies may be reckoned at 350,000 square miles, with a population variously estimated (8,000,000 according to some authorities). The boundaries of the empire are defined on the west, north, and northeast, where they touch, in order: the Sudan; the Italian colony of Massaua (Eritrea); the French Somali Coast; and the British Somaliland Protectorate. Northwards the boundary is about 15° 30′ N. lat., falling just south of Kassala. By the treaty between the United Kingdom and Ethiopia of May 15, 1902, the frontier between Ethiopia and the Sudan was fixed at a line drawn from Khor Um Hagar on the river Setit to Gallabat, thence to the Blue Nile, Baro, Pibor, and Akobo rivers to Melile, and onwards to the intersection of the 6° N. lat. with 35° E. long. The southern frontier, bordering the British East Africa and Uganda protectorates, was defined by treaty of December 6, 1907, and the frontier bordering the Italian colony of Benadir, by convention of May 16, 1908.

On July 6, 1906, an agreement between Great Britain, France, and Italy, as to their interests in Abyssinia, was concluded, and signed on December 13, 1906. It provided for the maintenance of the political and territorial status quo and of the open door. The three Powers agreed to join, in case of necessity, in safeguarding the interests of Great Britain and Egypt in the basin of the Nile, of Italy in Eritrea, Somaliland, and Benadir, and of France in the Somali Protectorate and hinterland and the zone necessary for the construction and working of the railway from Jibuti to Addis Abeba. They also agreed that a French company, approved by the French government, should construct the second section of the railway from Diré Dawa to Addis Abeba (continuing the existing French line from Jibuti to Diré Dawa) with a branch line to Harrar; but it was provided that the subjects of the three Powers should enjoy equal treatment regarding trade and traffic on the railway and at the port of Jibuti. Railways west of Addis Abeba were to be constructed by Great Britain, which had the right to construct a line from British Somaliland across Abyssinia to the Sudan. Italy might connect Benadir by railway with Eritrea.

The Abyssinians are Christians and their kings claim descent from Menelek, the son of Solomon by the Queen of Sheba. The principal occupations of the people are agriculture, cattle breeding, and hunting; the chief exports are coffee, honey, civet, wax, gums, spices, hides, rubber, ivory, and gold. The currency is the Maria Theresa (Austrian) dollar, but Indian rupees also find some circulation in Harrar, and a Menelek dollar is in circulation. Abyssinian trade passes principally through the port of Jibuti in French Somaliland; and in part through Massaua in Eritrea, Zaïla in British Somaliland, and Gambela on the Sudan frontier. Manufactures are limited to coarse cotton and woolen cloths, leather, pottery, and some iron, steel, and other metal articles.

Menelek II proclaimed his grandson, Lidj Yasu (or Jeassu), heir to the throne, and upon the death of Menelek in 1913, Lidj Yasu succeeded. September 27, 1916, Lidj Yasu was deposed and was succeeded on the throne by his aunt, Ouizero-Zeoditu, a daughter of Menelek (born 1876). She was crowned at Addis Abeba February 11, 1917. In an edict issued at the time she exempted all taxpayers who were in arrears and all criminals who were still at large. March 17, 1917, after an uprising, Raiswaldi Georgis, a cousin of the late Menelek, was crowned king of Wallou, Goudar, and Bekember. Meanwhile the deposed emperor, Lidj Yasu, was in the fortified town of Magdala with government troops. It was further reported that fighting had taken place at Wallou and also at Rousi and that Georgis was advancing to the former place and General Baltchi, to the latter. According to press despatches of August 27, Lidj Yasu and his followers had escaped from Magdala and later there were rumors of a battle in which the government was victorious. According to some reports (September 1) Lidj Yasu was captured; according to others (September 2) he was killed.

ACADEMY, French (Académie Francaise). A body of distinguished men of letters founded by Cardinal Richelieu in 1635. It is the oldest and the most celebrated of the five academies constituting the Institute of France. The other four are the Academy of Inscriptions and Belles-lettres, the Academy of Sciences, the Academy of Fine Arts, and the Academy of Moral and Political Science. The French Academy was reorganized in 1816; it is the final court of appeal in disputed literary questions, and its members are known as the Forty Immortals. The annual public session was held on December 20, 1917. During the year Joseph J. C. Joffre, Marshal of France, and John H. Cahill were elected members of the Academy; the latter in recognition of his munificence toward widows of French soldiers who had died in the war. The secretary of the Academy, who holds his position for life, is Etienne Lamy. The members in the order of their election are as follows: Othenin P. de Cléron, Comte d'Haussonville, Charles Louis de Saulces de Freycinet, Louis Marie Julien Viaud (Pierre Loti), Ernest Lavisso, Paul Bourget, Jacques Anatole Thibault (Anatole France), Gabriel Hanotaux, Henri Léon Emile Lavedan, Paul Deschanel, Edmond Rostand, Frédéric Masson, René Bazin, Etienne Lamy, Alexandre F. J. Ribot, Maurice Barrès, Maurice Donnay, Jean Richepin, Raymond Poincaré, Eugène Brieux, Jean Aicard, René Doumie, Marcel Prévost, Monseigneur Louis Marie Duchesne, Henri de Régnier, Denys Cochin, General Hubert Lyautey, Emile Boutroux, Alfred Capus, Pierre de la Gorce, Henri Bergson.

ACADEMY OF ARTS AND LETTERS, American. A body of distinguished men, limited to fifty in number, chosen from among themselves by the 250 members of the National Institute of Arts and Letters. The National Institute was organized at a meeting of the American Social Science Association in 1898. The Academy was founded in 1904, with William Dean Howells as president, which position he still held in 1917. The Academy is to a large extent modeled on the French Academy, and, with the National Institute, it holds an annual meeting; but the plans of the Academy are held in abeyance until the close of the war. In 1917 the membership list was as follows: William Dean Howells, Henry Adams, Theodore Roosevelt, John Singer Sargent, Daniel Chester French, John Burroughs, James Ford Rhodes, Horatio William Parker, William Milligan Sloane, Robert Underwood Johnson, George Washington Cable, Andrew Dickson White, Henry van Dyke, William Crary Brownell, Basil Lanneau Gildersleeve, Woodrow Wilson, Arthur Twining Hadley, Henry Cabot Lodge, Edwin Howland Blashfield, Thomas Hastings, Hamilton Wright Mabie, Brander Matthews, Thomas Nelson Page, Elihu Vedder, George Edward Woodberry, Kenyon Cox, George Whitefield Chadwick, Abbott Handerson Thayer, Henry Mills Alden, George de Forest Brush, William Rutherford Mead, Bliss Perry, Abbott Lawrence Lowell, Nicholas Murray Butler, Paul Wayland Bartlett, Owen Wister, Herbert Adams, Augustus Thomas, Timothy Cole, Cass Gilbert, William Roscoe Thayer, Robert Grant, Frederick MacMonnies, Julian Alden Weir, William Gillette, Paul Elmer More, George Lockhart Rives, Barrett Wendel, and Gare Melahers. The secretary is Robert Underwood Johnson.

ACADEMY OF SCIENCES, National. A body of distinguished American scientists, incorporated in 1863, with the object "whenever called upon by any department of the government, to investigate, examine, experiment, and report upon any subject of science or art." At the end of 1916 there were, according to the latest statistics available, 147 members and forty foreign associates. The officers were as follows: President, William H. Welch; vice-president, Charles D. Walcott; foreign secretary, George E. Hale; home secretary, Arthur L. Day; treasurer, Whitman Cross. The autumn meeting in 1917 was held on November 20-21 at Philadelphia in the Engineering Building of the University of Pennsylvania. Among the topics discussed were: "The Wheat Problem of the United States," by Irwin F. Smith; "The Atmosphere and Terrestrial Radiation," by Charles G. Abbot; "The Modern Systematist," by L. H. Bailey; "The Chemical Mechanism of Regeneration," by Jacques Loeb, of the Rockefeller Institute; "A Duty of the International Association of Academies," by William M. Davis; and "The Work of the National Research Council," by George E. Hale.

ACCIDENT INSURANCE. See Social Insurance.

ACCIDENTS. See Railway Accidents.

ACIDOSIS. See Chemistry.

ACTIVATED SLUDGE. See Sewerage and Sewage Treatment.

ADAMSON LAW. See Arbitration and Conciliation, Industrial.

ADEN. A British possession in southwestern Arabia, forming a part of the Bombay Presidency of British India. It consists of a peninsula and a small strip of coast. Area, 75 square miles, or with the Island of Perim 80 square miles. Population in 1911, 46,165, as compared with 43,974 in 1901. A territory extending inland from Aden, about 9000 square miles in area, is under British protection; estimated population, about 100,000. The town of Aden is strongly fortified and constitutes an important coaling and transhipment station. Except the small quantities of exports and imports to and from Arabia, the trade is almost wholly transit. In 1915-16 imports of private merchandise by sea were valued at £3,500,039; by land, £107,621; imports of treasure, £268,663. Private exports by sea in that year, £3,044,131; by land, £46,303; exports of treasure, £393,442. The leading imports by sea are cotton goods, grain, hides and skins, and tobacco. The exports by sea include these articles, together with coffee, gums, civet, and wax. The total value of the exports from Aden to the United States during the third quarter of 1917 amounted to only $85,482. This amount was made up of civet valued at $4367 and skins valued at $81,115. During the corresponding quarter of the previous year the total exports from Aden to the United States were valued at $541,895, and were made up of civet, with a value of $3006; coffee, $34,812; gums, $1145; hides, $3740; senna leaves, $1614; and skins, $497,578. The remarkable falling off in exports mainly was due to the lack of shipping space. One probable result of the shipping condition would be direct shipments to the United States from Red Sea ports which normally send their American shipments through Aden. Owing to the restrictions governing shipments on British steamers from Aden to foreign countries, with transhipment in England, a large share of Aden exports to America during 1917 went by Italian steamers on a through bill of lading with transhipment in Italy. American importers normally take a larger share of Aden exports than those of any other nationality, and the inability to make the usual shipments to the United States was having a depressing effect upon the local export business. Aden is subject to the government of Bombay and is administered by a resident, who is also commander of the troops in the garrison. Administratively attached to Aden, besides Perim, are Socotra and the Kuria Muria Islands.

ADVANCEMENT OF SCIENCE, American Association for the. The seventieth meeting of the American Association was held in Pittsburgh, Pa., on December 28, 1917, to January 3, 1918. Twenty-four affiliated societies met with the Association at the same time. At the permanent secretary's office the total registration was 692. Of these, 194 were from Pittsburgh and other parts of Pennsylvania. Several distinguished foreigners attended, and these, who were made honorary associates for the meeting, included Lieut. Georgia Abbetti, of the Italian Military Commission; Capt. De Guiche, of the French Military Commission; Dr. Shigetaro Kawasaki, Chief Geologist of Korea; and Lieut. G. P. Thompson, of the Royal Flying Corps of Great Britain. War topics dominated the meeting—the ways and means necessary to carry through the war on a basis of scientific efficiency to a victorious conclusion. The opening general session took place on the evening of Friday, December 28, in the lecture hall of the Carnegie Institution, and in the absence of Prof. Theodore W. Richards, the senior vice-president, Dr. George H. Perkins, of the University of Vermont, presided. An address of welcome on behalf of the Mayor of Pittsburgh was given by Mr. H. M. Irons, city attorney of Pittsburgh. After amendments to the constitution had been passed, including one making secretaries eligible for reëlection, Dr. C. R. Van Hise, retiring president of the Association, gave a notable address on "Some Economic Aspects of the World War," after which a reception was held by members of the local committee and their wives.

Hon. John Barrett read a paper on "The War and the New Pan-America"; Howard E. Coffin, president of the Aircraft Board at Washington, gave an address on "General Standardization"; Dr. Vernon L. Kellogg, now associated with Mr. Hoover's work at Washington and formerly of the Belgian Relief Commission, spoke on "The Biological Aspects of the War;" and Lieut. George Loewy, of the French Army, gave an address on "The Treatment of War Wounds by the Carrel Method."

Among other topics on which papers were read and discussions held in the various sections were: "Education in Chemical Engineering"; "Factors Concerned in an Increased Agricultural Production"; "Relationship of Physics to the War"; "War Problems in Botany"; "Contributions of Zoölogy to Human Welfare"; "Medical Problems of the War"; "The Organization of War Gardens"; "Insects and Camp Sanitation"; "How the Entomologist Can Assist in Increasing Food Production," and "Phytopathology in Relation to War Service." Among the acts of the Council of the Association were these: C. H. Fernald, R. H. Richards, Marshall Calkins, and T. J. W. Burgess were made life members emeritus under the terms of the Jane M. Smith Fund; the movement for the revision of the constitution of the Association was held in abeyance; and it was decided that until the next annual meeting all business of the Association be referred to the Committee on Policy with power to act.

It was decided to hold the next meeting of the Association in Boston, Mass., beginning on Friday, December 27, 1918, but the decision was subject to the power of the Committee on Policy to cancel the meeting or change the date. It was recommended that St. Louis be chosen as the place for the next meeting after that held in Boston. The following officers were elected: president, John M. Coulter, of the University of Chicago; vice-presidents, George D. Burkhoff, Gordon T. Hull, Alexander Smith, Ira N. Hollis, David White, William Patten, A. F. Blakeslee, John Barrett, Frederick S. Lee, S. A. Courtis, H. P. Armsby; general secretary, O. E. Jennings.

ADVANCEMENT OF SCIENCE, British Association for the. On account of conditions due to the war, the meeting of the Association for 1917 was postponed.

ADVENT CHRISTIANS. See Adventists.

ADVENTISTS. The Seventh Day Adventists, the largest branch of this denomination, had on December 31, 1916, a total church membership of 141,488, a net gain over 1915 of 4609. The total number of churches on December 31, 1916, was 3987; ordained ministers, 991; licensed ministers, 687; Sabbath schools, 5390; Sabbath school membership, excluding teachers, 153,781. The value of the church property on December 31, 1916, was $2,461,779. The number of Young People's Societies was 1342; their total membership, 25,836; mission fields, 113; number of languages in which publications were issued, 90; the total contributions for all lines of evangelistic work in 1916 were $3,950,491, which is $27.92 per capita. The total contributions for both evangelistic and institutional work for 1916 amounted to $6,043,082, or $42.71 for each member. At the close of 1916 there were 40 publishing houses and branches, with investments of $2,167,177, and employing 740 persons in the production of denominational literature. There are seven educational institutions carrying college courses: Clinton Seminary; Emmanuel Missionary College; Loma Linda, Pacific, Union, Washington Missionary, and Walla Walla colleges. Other branches of Adventists are: Advent Christians, about 26,000 communicants, 550 churches, 528 ministers; the Church of God, about 600 communicants, 20 churches, 32 ministers; the Life and Advent Union, 509 communicants, 12 churches, and 12 ministers in 1914, the latest available statistics; and the Church of God in Jesus Christ, 2224 communicants, 68 churches, and 61 ministers in 1914.

AËRONAUTICS. The progress made in aëronautics during 1917, and in fact the great developments that had resulted during the three and a half years of the war, more than anything else demonstrated the future commercial value of aviation at the termination of hostilities. This was seen especially in the development of large machines for bombing with their powerful and reliable engines, which naturally indicated such commercial applications as the transport with speed and economy of express, mail, and passengers. Aside from such suggestions for the future there were important developments in 1917 of direct military importance. The speed, maneuvring ability, and armament of the fighting machines were steadily improved, so that for the scouts and the smaller fighting planes the rate of speed attained in some cases reached almost 150 miles an hour. Likewise the development of the armament of all types of aëroplanes made marked progress, so that by 1917 the aëroplane had to be reckoned not as an important aid for scouting and observing but as an offensive weapon of direct value, and one that promised greater use in the future. The machines of large capacity used for bombing were exemplified in the Gotha biplane used by the Germans in attacking England, the Handley-Page biplanes of the British which could carry a crew of four men with three guns and a ton and a half of explosive bombs, and the Caproni triplane of the Italians which carried three tons of bombs. See Military Progress.

A most significant event was the entrance of the United States into the great European war. In previous years the United States had contributed a large number of machines to the Allies, yet there had not been actually developed a policy commensurate to the part the United States was destined to play in the great war. Accordingly the work done in the United States in 1917 after the declaration of war, was necessarily preparatory, although large numbers of student aviators were sent abroad for training, and complete training was begun in the United States. It was realized that whatever was to be done in the way of preparation must be done on a scale entirely unprecedented, and accordingly the manufacturing resources of the country were mobilized as regards their facilities for turning out aëroplanes. Naturally in a record of the activity of the year, much is unavailable for publication for military reasons, and more remains that involved merely wholesale organization and production. It was decided however by the responsible officials of the United States and their foreign allies that the greatest assistance could be rendered by turning out at once a large number of standard machines rather than by carrying on experiments to develop a more perfect or more efficient construction that might involve radical departures from existing practice. In fulfillment of such a policy it was stated at the end of the year that a fleet of 22,000 aëroplanes was under construction in the United States, and that a force of 10,000 aviators was being trained, while the total personnel of the flying corps under the new organization was to amount to 100,000.

In addition to the work of organizing factories and stations for aëroplanes in the United States, a force of mechanics was enlisted to proceed to France and construct and establish repair stations behind the lines for the American aviation service. Arrangements were made for training these men in England during the winter of 1917-18, and they were to be sent abroad with the various units as required.

The aëronautical appropriation bill, signed by President Wilson on July 24, involved the sum of $640,000,000, and this measure at once gave an impetus to the manufacture of aëroplanes and the training of aviators. The leading aëroplane manufacturers of the United States agreed to pool their patent interests for the good of the nation, and a new organization known as the Manufacturers' Aircraft Association, Inc., was formed. By agreement, the various patents owned by individual members were to be taken over and licensed so that their use might be made universal to all in the industry. The control of the new association was placed in the hands of three voting trustees, consisting of Judge W. Benton Crisp, patent attorney, Professor Joseph S. Ames of Johns Hopkins University, and Albert H. Flint, a well-known aëroplane manufacturer. Of these three, one represented the Manufacturers' Aircraft Association, Inc., one the Curtiss-Wrights' interest, and the third was a neutral elected by the other two.

To take the place of the Aircraft Production Board, a new Aircraft Board was established, and on November 10, it was announced that Howard E. Coffin, chairman of the former board, had been appointed chairman of the new board, of which R. F. Howe of the International Harvester Company was appointed as civilian member, Maj. Gen. George O. Squier, Chief Signal Officer, Col. E. A. Deeds and Col. R. E. Montgomery were the army members, and Rear Admiral Taylor, Capt. M. E. Irwin, and Lieut. Com. A. K. Atkins were the Navy members.

During the year the International Aircraft Standard Board of the Advisory Commission of the Council of National Defense formulated specifications for aircraft construction and materials. These specifications covered general inspection and testing instructions, raw materials, fabricated materials, fabricated parts, etc. The various series named above were further subdivided and for each separate material specifications were prepared in detail. It was anticipated that these or other specifications would figure in some form of international specifications which international committees of the various nations were contemplating.

Commercial Aërial Navigation. In America as in Europe increasing interest was manifested during the year in civil aërial transport, and in plans to utilize after the war the large number of military aëroplanes and aviators. The National Advisory Committee for Aëronautics accordingly appointed a committee of civil aërial transport, consisting of chairman, Dr. W. F. Durand; Dr. S. W. Stratton, director of the United States Bureau of Standards; Professor Charles F. Marvin, chief of the United States Weather Bureau; Lieut. Col. V. E. Clark, Signal Corps; and Lieut. Com. J. H. Towers, U. S. N.

Seven definite routes for airways across America and up and down the Atlantic and Pacific coasts were proposed during the year which were to be discussed at an aëronautical congress to be held in New York in February, 1918. These airways were laid out with due regard to suitable stopping places and for the transportation of mails.

In this connection much attention was being paid in Europe to the development of various air routes and their regulations. Colonel Lord Montagu of Beaulieu discussed this subject in a lecture on June 21, 1917, and stated that once the war was over, there must be national and international laws for the regulation of flying. The discussion included the definition of oversea and over-continent routes and plans to utilize to the greatest advantage the winds of the world. Lord Montagu proposed that above 10,000 feet, the air should be free to all; above 8000 feet, it should be restricted to official planes; between 4000 and 6000 feet it should be available for general air traffic and commercial planes; between 2000 and 4000 feet, would be a general commercial level where a maximum speed of 80 miles per hour would be maintained for planes fitted with silencers. Up to 2000 feet the air would be free for private traffic and restricted from aërial nuisances.

In the British House of Commons, a special aërial transport committee was announced on May 23, to study the possibilities of the application of aircraft to commercial purposes. This committee included representatives of the British Air Board, the Royal Aëro Club, the Government of India, the Royal Flying Corps, the Royal Naval Air Service, the Colonial Office, the Foreign Office, the Post Office, the Treasury and Board of Customs, and the Meteorological Office. The purpose of this committee as stated in the House of Commons by its deputy chairman was as follows:

> "To consider and report to the Air Board with regard to: (1) The steps which should be taken with a view to the development and regulation, after the war, of aviation for civil and commercial purposes, from a domestic and Imperial and an international standpoint. (2) The extent to which it will be possible to utilize for the above purposes the trained personnel and the aircraft that the conclusion of peace may leave over and above the requirements of the naval and military air services of the United Kingdom and the overseas dominions."

In France also the question of civil aëronautics was discussed during the year, and on January 6, 1917, a Commission of Civil Aëronautics was created by ministerial decree to study the possibilities of using aircraft for transportation of mail and other commercial purposes. This commission included representatives of the Cabinet of Deputies, the Bureau of Post Offices and Telegraphs, the Aëro-Club de France, the Chambre Syndicale des Industries Aéronautiques, and the Aërial League of France.

The British Air Ministry. The various attempts made to secure a British Air Minister as a member of the Cabinet, resulted in the appointment of Baron Rothermere, chief proprietor of the *Daily Record and Mail*, of Glasgow, and the Leeds *Mercury* as Air Minister. This post previously had been refused by Lord Northcliffe on account of his dissatisfaction with the policies of the Prime Minister, Lloyd George.

Military Aëronautics. The record of military aëronautics during 1917 was one of increasing activity in all departments. Numerous attacks were made on the British Isles by German aëroplanes and Zeppelins but generally without conspicuous success, while in response a general attempt at reprisal raids was undertaken by British and French on the German fortifications and cities An interesting development of the aërial fighting was the attack in force on various aërodromes and supply stations according to preconceived plans and careful arrangements. This naturally led to corresponding measures of defense, so that aërial battles were being fought as independent actions in quite as definite a manner as in the case of the artillery on the surface of the ground. Dock and harbor works, such as those at Ostend, Zeebrugge, and Bruges, munitions dumps, and in December the city of Mannheim itself were the objects of attack, and a measure of success was attained. While exact details were not available at the end of the year for either the specific actions or the results in the aggregate it was certain that the Allies carried on bombing to a greater extent and more profitably than ever previously during the war.

Perhaps the most significant and spectacular action so far in the war was the attempt made on Friday, October 19, 1917, by a score of Zeppelin airships to bomb England. This event was compared at the time to the defeat of the Spanish Armada in 1588 by Drake's fleet. The German Zeppelins which officially were said to have numbered at least ten apparently were lost in the fog, and were scattered over France, by a strong wind. Four were brought down in France and two were sunk in the waters of the Mediterranean. It was stated in Parliament by Sir George Care, Home Secretary, that five of the Zeppelins reaching England failed to attain their purpose. One drifted over London dropping three bombs. The British aëroplanes went up, but were unable to bring the raiders into action, due largely to atmospheric conditions, and the total number of casualties amounted to 34 killed and 56 injured.

Of the airships taking part in this raid the L-45 was compelled to land in the village of Laragne and the captain and crew were captured, while the L-49 which came down near Bourbonne-les-Bains was captured intact by the French. See Military Progress; Naval Progress.

A summary of the extent to which aëronautics was employed by the British Army was shown in a statement on October 24 by Major-General Frederick B. Maurice, chief director of military operations, in which he said:

> "During September our bombing machines made 226 raids, dropping on the Germans 7886 bombs, representing 135 tons of explosives. In the same period the Germans dropped almost exactly 1000 bombs on the British. Now bombing is only a part of our air operations. By far the most important work is the direction of the artillery.
>
> "During September we made 7962 'shoots' at enemy batteries under aërial observations and silenced them in 1813 instances. During the same period the Germans succeeded in ranging on only 748 of our guns.
>
> "During September we engaged and brought down 274 enemy planes, and this figure errs on the side

of conservatism, for our headquarters never allows credit for a victory unless the fall of an enemy is corroborated from either an observer on the ground or another airman in the vicinity.

"It is no discredit to the British airmen that they did not bring down a single Zeppelin, while the French airmen brought down five, in the course of the Zeppelin visit a few days ago. No French airman would think of comparing the task which they had of attacking the Zeppelins in daylight, when the airships were at the end of a long flight and partially crippled, with that of the British in finding and attacking them in the night.

"Incidentally it may be said the British air service since the beginning of the war has brought down sixteen Zeppelins under conditions far more difficult than those under which the French were so successful the other day."

Notable Aëroplanes of 1917. One of the most efficient war planes of 1917 was the British Handley-Page machine which has figured conspicuously in official reports where bombing operations against German bases have been involved. During 1917 these machines were being manufactured extensively and towards the end of the year were going into service almost daily. The Handley-Page machine had two 12-cylinder Rolls-Royce motors of 280 horsepower each, while the top wing was 98 feet wide, the length of the machine 65 feet and its height 20 feet. It had mountings for three Lewis guns. This machine held the world's record in 1917 for large number of passengers carried, having borne 21 passengers in one flight to a height of 7180 feet.

Among the German aëroplanes, the Gotha biplane was used with considerable effect and was said to exhibit a marked resemblance in certain particulars to one of the best known large aëroplanes of the British service. These Gotha planes were about 40 feet in length and of the "pusher" type. The wings set at a very slight dihedral angle were equal in span (about 77 feet) with projecting ailerons. There were two guns where operators both front and rear could fire downwards and upwards, as well as on their own level, or right and left. The bottom of the fuselage was open for a great portion of its length, enabling the gunner to fire at a pursuer through the tunnel so formed.

In the United States, the Curtiss works developed the triplane which had a wing span of 146 feet and was provided with a boat hull. It was thought by many aëronautical engineers that if the heavy hull was supplanted by wheels it would be able to carry several tons of explosive over distances as great as a thousand miles. Another American machine developed during the year was the Galaudet biplane, which was available either for bomb dropping or torpedo launching.

Aëroplane Engines. The development of the power plant of the modern aëroplane typified mechanical progress generally in the elimination of various extreme and special types and the approximation to well-defined standards. By 1917 two main types of motor had survived, the rotating-cylinder engine such as the Gnome, LeRhone, and Clerget patterns, and various forms of vertical-cylinder or V-cylinder motors. The German practice during 1917 was to use a vertical-cylinder engine of the Benz or the Mercédès type and seldom more than six cylinders were employed in a single unit, but, with the Allies the most usual type had the eight or twelve cylinder V-form. Single motors were being built up to 300 or 400 horsepower and some of the larger machines had four power plants installed with an aggregate output of from 1200 to 1500 horsepower. There was a general tendency manifested in 1917 to give greater power to all of the aëroplanes and where once an 80-horsepower engine was provided for a small high-speed scouting or fighting plane, this was being increased to 150 or 200 horsepower. As illustrating the high quality of design and construction it might be said that the increase in power was not attained at the expense of weight as some of the air-cooled revolving-cylinder motors did not weigh more than three pounds per actual horsepower, while powerful watercooled engines were built which did not weigh more than four pounds per horsepower. The American Liberty Motor was said to have surpassed European achievements and weighed only two pounds per horsepower.

Another compelling reason for increasing the horsepower, was the increased altitude and higher speeds which many of the scouting planes were required to attain. In some cases, an altitude of over 20,000 feet and a speed of from 125 to 140 miles per hour were required, and accordingly it was necessary to provide for an extraordinary condition developed at the higher altitudes. Inasmuch as the atmospheric pressure decreases from about 14.7 pounds per square inch to about 10 pounds per square inch at an altitude of 10,000 feet, an ordinary engine would develop at the higher altitude only about ⅔ of the power produced at sea level. Furthermore, as the altitude increases, the temperature of the air diminishes, and this too had its effect on the operation of the engine. In many engines designed for flight at high altitudes, the normal operation was arranged for the higher levels, and the full power was not utilized at low altitudes.

Late in the year, there was assembled in Great Britain an exhibition of captured German aëroplanes and engines for the benefit of designers and manufacturers of aëro-engines. It was here made plain that German practice had settled down to a straight-forward racing car engine design in which reliability, durability, and ease of manufacture with ordinary labor and shop equipment, were the chief essentials rather than extraordinary lightness for the power developed. A nine-cylinder rotary air-cooled 100 horsepower Oberursel engine which had been used on a Fokker fighting monoplane marked the departure from the more usual vertical engines and resembled the class of the Gnome rotary engines.

The various styles shown were typical of German equipment. There was the Mercédès 160-horsepower and 260-horsepower; Benz, 160-horsepower and 260-horsepower; and Argus, 120-horsepower and 200-horsepower. In some cases the German engines were found equipped with English carbureters and English magnetoes, for the Germans were stripping captured British machines and fitting their auxiliary equipment to their own motors.

The Liberty Motor. In the United States a significant event of the year was the development of the so-called Liberty Motor, or a standard design for the wholesale production of aircraft which was being commenced in the United States. This motor represented the joint efforts of the Aircraft Production Board, of the Signal Corps, Messrs. Jesse G. Vincent and

Hall, and many engineers and other American and European experts who united to produce a new standard power plant that would be available for the aërial forces of the United States as well as of the Allies

The motor designed had eight cylinders and was expected to develop over 250 horsepower, while with four additional cylinders, it was expected that 400 horsepower at 1625 revolutions per minute would be developed. In the development of this engine all of the patents, ideas, and resources of the leading aëronautical engineers and motor manufacturers of the United States were made available, and on July 3, 28 days after the drawings were started, an experimental motor engine was set up. On July 4 a test of the motor was made and deliveries began soon afterward. On September 14, a machine fitted with a Liberty Motor piloted by H. W. Blakley made a flight of three-quarters of an hour with Colonel Theodore Roosevelt as a passenger.

The new engine represented the best approved and accepted practice not only of the United States, but of England, France, and Italy, the plans being conservative in that no novelties were introduced or ideas that had not been tested in actual practice. It had a weight of about two pounds per horsepower developed. Thirty days after the first engine was assembled and underwent preliminary test, the government formally accepted the designs, the experts considering it the best all-around aircraft engine produced in any country, and one that had every element of success. In addition to experiments in the vacuum chamber of the U. S. Bureau of Standards, a test conducted at Pike's Peak showed the new aviation engine could perform satisfactorily at the high altitude, while in a flight test an aëroplane thus equipped broke the American altitude record. Owing to the policy of standardization adopted, the construction, repairs, and maintenance were greatly facilitated and spare parts were always to be available.

The engine was designed so that it could be constructed in four models, ranging from four to twelve cylinders, with all of the parts interchangeable, so that a new engine could be assembled from the parts of a wrecked machine. The standardization, however, was not carried to such an extent that no changes or improvements could be made during the war.

British Motors. During the year the Sunbeam Motor Car Company brought out aircraft engines of high output which were distinguished by the fact that they had no fly-wheel and the crank case and nose piece were cast in one so as to gain increased rigidity and accessibility. The 6-cylinder narrow type engine arranged with vertical cylinders had an output of 170 B. H. P.; the 12-cylinder engine of the V-type had an output of 350 B. H. P.; while in a 475 B. H. P., a broad arrow-type engine, there were three rows each with 6 cylinders set on a common crank case. The engines were water cooled and were notable for their low consumption of gasoline and oil. These high capacity motors were typical of the tendency towards using more powerful machines on the military aircraft during 1917.

Aëroplane Armament. The first aëroplanes carried simply rifles or automatic pistols, and from this it was a simple step to install quick-firing guns but with somewhat crude mountings. Early machines thus armed had considerable dead angle in which the guns could not be used and accordingly they were susceptible to surprise attacks. In the early machines of the French, the dead angle was in the rear and sides, while in the German machines, the dead angle was in the front. At first there was little precision in firing due to various causes, but this soon was removed, and both in France and in German and Austrian services standard arrangements soon were adopted. There were fixed quick-firing guns for firing in front, above or through the propellers of a single seated machine; and later a second gun mounted on a turret was supplied in two-seater machines for firing astern. A quick-firing gun for front firing was mounted on a turret, a similar gun was arranged for firing astern, while a gun was provided for firing below the fuselage by the pivot mounting in the case of a three-seater machine.

Garros, the French aviator, in his machine was the first to fire a fixed quick-firing gun through the propeller, losing of course a certain percentage of his balls which struck the sleeves of the propeller blades, and this plan was adopted by the Germans, except that they sought to synchronize the operation of the quick-firing gun with the working of the engine.

In the large Gotha three-seater aëroplanes, where two propellers and two engines are used, and this is true for other German powerful machines also, the armament consisted of a quick-firing gun on a turret forward and a small one aft, with a third gun arranged for firing downward below the fuselage. The Germans employed during 1917, a series of bullets classed as ordinary, perforating, incendiary, and explosive, whose functions are sufficiently indicated by their names. The operation of the various guns in the German service was well-known to the aviators of the Allies during 1917, and a description of the same was published during the year in *La Nature*. In the case of the Allies, similar arrangements were used or were in course of development, and the use of quick-firing and rapidly-firing guns was being developed not only for aërial battles but also for attacking troops on the surface of the earth.

Dirigible Balloon. While the experience of 1917 indicated that the Zeppelin airship was of diminishing importance, there was no reason for assuming that the dirigible had been discarded for many forms of service. In connection with the submarine patrol work, the Allies were using this form of airship to an increasing degree and the Italians had developed the Forlanini type to a degree where it could achieve considerable altitude and was stable on long distance flights. In the United States, in May, 1917, the first of sixteen non-rigid dirigible balloons ordered by the Navy Department was completed and tested, making a trial trip from Chicago to Akron, Ohio, more than 400 miles. This American airship was said to be very much after the pattern of the British "blimps." It was also reported that the remainder were completed and put into service along the Atlantic coast during the year, to assist the submarine chasers and other coast defenses.

The German Zeppelin, L-49, which came down in France after the October raid on England, was an airship 650 feet in length and carried four cars, two of which were at the sides, and the other two were placed on the main axis of the aëroplane. In the forward car were the quarters of the captain. The propellers were driven directly from six engines of the Maybach type, each developing 240 horsepower, enabling a speed of 70 miles to be obtained. The hydrogen gas was distributed in 20 small ballonetts. In the latter part of the year, it was reported from Switzerland that the latest Zeppelins were 760 feet in length and 78 feet in diameter, and were supplied with eight engines developing an aggregate of 2000 horsepower. They were able to remain in the air 50 hours.

In a statement issued towards the end of the year in behalf of the Allies it was explained that some 43 Zeppelin airships could be accounted for:

Destroyed in Germany, 5; destroyed in neutral countries near the front, 5; destroyed in England by the British or on their way home from raids in England, 15; out of use, 5; used at training schools, 4; in use especially in the North Sea, 9; total, 43.

CONTROL BY TORPEDO BOATS FROM AN AËROPLANE. The aëroplanes were used in connection with electrically controlled sea-raiders employed by the Germans off the coast of Belgium. These electrically controlled boats carried a charge of high explosives from three hundred to five hundred tons in weight and were driven by twin-screw gasoline motors. On a drum was wound some thirty to fifty miles of insulated single core cable through which the boat could be controlled electrically. After the engine was started, the crew left the vessel and then a seaplane, protected by a strong fighting patrol, accompanied the vessel at a distance, and signaled to the shore operator the direction to be steered.

NOTABLE FLIGHTS. A new world's long distance flying record was made on August 29 by Capt. Guilio Laureami of Italy, who flew without stopping from Turin to Naples and return, a distance of about 920 miles. A new S. I. A. machine with a Fiat motor was employed. This record for non-stop flight supplants that previously held by Lieut. Antoine Marchal, a French aviator, who in June, 1916, flew about 807 miles from Nancy to Chelm, Russian Poland, in the course of which he dropped bombs on Berlin. Lieut. Marchal was captured by the Austrians at Chelm, and was interned at Salzerbach. Another notable nonstop flight from Italy to England was made on September 23, 1917, by Capt. Laureami, who accomplished the 656 mile journey in 7 hours, 22 minutes, 30 seconds. He flew in an Aila machine carrying a mechanic as passenger and two machine guns.

The British Admiralty announced on November 22 that an air attack in the vicinity of Constantinople had been successfully made by a large bombing aëroplane which enjoyed the unique distinction of having flown from England to Constantinople, a distance of almost 2000 miles. This was stated at the time as a world's record of a cross-country journey in view of the weight carried, and also was remarkable on account of the strong winds and heavy rain storms experienced, with a stretch of 200 miles over a mountainous country where a landing would have been impossible. The attack on Constantinople was made from a British base in the Mediterranean, which was the last of a series of eight stops, among which were Lyons and Rome. The total time in the air for the machine was 31 hours.

A unique flight was made on November 1, when Lieut. Hanson McCann, U. S. N., left the Norfolk Navy Yard in Virginia at 5.30 o'clock in the afternoon, and with one stop to obtain a fresh supply of fuel flew to Duquoin, Ill., a distance of 1023 miles in order to enable a seaman who was carried as passenger to reach the bedside of his dying mother. At Norfolk, Va., Captain Razanti, one of the seven Italian aviators to spend the autumn in America, took 21 passengers 17,000 feet into the air. On this trip he was 56 minutes in flight and during that time flew 82 miles. This flight broke the world's record for altitude for machines carrying more than 5 passengers.

ITALIAN AVIATORS IN AMERICA. A notable flight of the year was made on November 13, when Captain Silvio Resnati of the Royal Flying Corps, a member of the Italian aërial delegation, flew from Mineola, L. I., to Langley Field, Norfolk, Va., in a huge Caproni machine. This flight was 322 miles in extent and the Caproni biplane carried 10 passengers, including, in addition to the pilot, Captain Resnati: Capt. H. H. Salmon, Jr., U. S. A., assistant pilot; Capts. Davis and Willetts; Lieuts. Simonin, Haggarty, and Watson; Privates Blackman and Neiardt of the U. S. A.; and one mechanic. The Caproni biplane, which arrived in the United States on October 22, attracted much interest among United States army aviators and aircraft engineers, on account of its size and capacity. It made a number of notable flights in which various officials, officers, and experts were carried as passengers.

Another Italian aëroplane, the Pomilio biplane, made a number of record flights after its arrival in the United States. The Pomilio biplane, piloted by Attilio Valdioli, with Capt. L. B. Lent, U. S. A., as passenger, made the trip from Langley Field, Norfolk, Va., to Mineola, L. I., a distance of 322 miles, in 2 hours and 50 minutes. At the same time the Caproni made another record flight. With eight passengers, it flew from the Langley Field to Mineola, while the S. I. A. machine, piloted by Lieut. Ballerini with a passenger, made the trip in 3 hours and 25 minutes.

DEATH OF CAPTAIN GUYNEMER. One of the casualties of the great war was the death of Capt. George Guynemer, the most famous French aviator, which occurred on September 11, in the course of a reconnoissance flight over Flanders. Capt. Guynemer was reported to have engaged five machines of the Albatross type D-3, when he was overwhelmed by the large number of enemy machines soaring at a great height falling upon him. There were 40 enemy machines in the air at one time, including Count Von Richthofen, the celebrated German aviator. An attempt was made by some Belgian machines to come to the aid of Capt. Guynemer, but they were too late. A comrade reported that he saw Guynemer's machine drop gently towards the earth, but not on fire. In the official French announcement, the 50 aëroplane victories of Capt. Guynemer were commented on, and it was unofficially announced in the course of his flying career that he had accounted for 52 enemy machines. Guynemer was one who operated his aëroplane alone, serving as both pilot and gunner.

Distinguished American Aviators. In the distribution of French military honors for aircraft distinction, the Americans decorated were Lieut. Raoul Lufbery, seventh on the list of French aces, and Sergts. Robert Rockwell, Robert Soulbain, and David McKay Peterson. The records of these men were duly published in official citations.

Advertising the Liberty Loan. In connection with the campaign for the Liberty Loan American and foreign aviators in this country played an important part and aroused considerable interest showering paper bonds and bond posters over many of the main American cities.

Theoretical Considerations. Among the theoretical discussions connected with the development of aëroplanes was the question how far the size and weight of flying machines could be carried. It was believed that in view of the condition of the art of design and construction of both planes and motors, and reasoning along analogous lines in the experience of the motor car industry, there would be no very extraordinary increase over the dimensions of the largest machines seen in 1917. At a meeting of the Aëronautical Society of Great Britain, Lieutenant A. R. Law presented a paper with a theoretical curve representing the attempt to fix the limits of capacity and power on the basis of present scientific knowledge. While this curve was based on data which he had collected before the war, yet it was interesting to note that there had been no better performance than the ideals therein indicated. Lieut. Law had assumed an ideal machine embodying every element with a coefficient of performance attained with any one of these elements, and his data were obtained in large part from the army trials held a year or two prior to the war. No machine constructed by 1917 had exceeded in efficiency the theoretical composite thus evolved, and the curve indicated the various useful ranges of altitude which could be attained with various machines.

Thus a machine that could function satisfactorily at sea-level with a total weight of 12½ tons would have to be reduced considerably in weight to attain a height of 10,000 feet, while for a height of 25,000 feet the total and useful weight would be correspondingly diminished. Expressed mathematically the limit of weight varies nearly as the cube of the density of the air (which of course is reduced with increase in altitude), and the heights attainable could be plotted as ordinates against the ratio $\frac{\rho^3}{\rho_0{}^3}$ as abscissae where ρo is the density of the air at sea-level and ρ is the density at any other level.

Measuring Aircraft Performances. In Great Britain, the testing squadron of the Royal Flying Corps developed methods for the accurate testing of aëroplanes which by 1917 had become standardized and remarkably efficient both on a theoretical and practical basis. The general principles of the scientific testing were first laid down at the Royal Aircraft Factory, and with the increase of construction became standardized and developed in coöperation with the researches of various physicists and meteorologists. A paper on this subject was presented by Captain H. T. Tizard, R. F. C., before the Aëronautical Society of Great Britain during the year, and was reprinted in the various aëronautical papers, as well as comprehensively abstracted in *Engineering* for August 24, 1917.

The methods of testing employed dealt with speed, rate of climb, stability, ease of operation, and other phenomena, mechanical efficiency and technical standards being considered as well as military availability.

U. S. National Insignia for Aircraft. The War and Navy Department decided during the year on an insignia for the United States aircraft. It consists of a five-pointed white star inside of a blue circumscribed field, with the centre of the star red. One of each of these insignia was to be placed on the upper surface of each upper wing and also one of each on the lower surface of each lower wing. It was further provided that the rudder was to be painted in three bands of red, white, and blue, the blue band being nearest the rudder post, the white band in the centre, and the red band at the tail of the rudder. The national aircraft insignia was also to be placed on the gas bag of dirigible balloons, and the rudders were similarly to be marked. See Aviation Fields.

AËROPLANE. See Aëronautics.

AFGHANISTAN. A monarchy of central Asia lying between Persia on the west and tribal areas within the jurisdiction of the Government of India on the east. To the north are Russian territory and Bokhara; to the south, Baluchistan (British). Capital, Kabul. An estimate of area is 225,000 square miles; another estimate is 250,000 square miles. The population comprises various tribes, the most important of which include the Durrani, the Ghilzai, the Tajik, the Hazara, the Aimak, and the Uzbak. An estimate of their aggregate number is 5,000,000; another estimate, 6,000,000. Kabul is said to have about 180,000 inhabitants; Kandahar, 40,000 (some estimates are higher, one being 80,000); Herat, 20,000. The people, as well as the ruler, or ameer, are Sunnite Mohammedans, and justice is administered on the basis of the Koran. The principal occupations are grazing and agriculture. Mining has made little progress; manufactures include silks, felts, carpets, sheepskin coats, and articles of camels' hair and goats' hair. The chief exports are timber, fruit, cereals, pulse, ghi, wool, hides, cattle, spices, asafœtida and other drugs, and the manufactures mentioned above. The leading imports are cotton goods, tobacco, dyeing materials, sugar, and tea. The foreign trade, which is not reported by the government, is carried on chiefly with India and Bokhara. According to Indian returns, exports of merchandise to Afghanistan in 1914-15 were valued at £909,000, and imports of merchandise from Afghanistan at £806,000; in 1915-16, £1,021,000 and £1,116,000. The value of imports from Bokhara to Afghanistan is estimated at about 4,000,000 rubles, and that of exports to Bokhara about the same. Taxes are levied on production in amounts varying from one-tenth to one-third and their collection is often attended with oppression and extortion. The government is loosely organized. The power of the ameer, an hereditary prince, varies with his own character, ability, and fortune. His army, including local levies, numbers upwards of 50,000 men, of whom about 16,000 are cavalry. The ameer's annual revenue probably exceeds 13,000,000 rupees; from the Government of India he receives an annual subsidy of 1,800,000 rupees. The Afghan government has by treaty no foreign relations except with the Government of India. The ameer in 1917 was Habib Ullah Khan, who was born July 3, 1872, and succeeded his father, Abd-ur-Rahman Khan, October 3, 1901.

AFRICA. After Asia the largest continent of the globe. Almost all of Africa's extent consists of colonial possessions of Great Britain, France, Portugal, Belgium, Germany, Italy, and Spain. Abyssinia and Liberia are independent, while Morocco is under Spanish and, especially, French protection. See the articles on the various African countries; also ANTHROPOLOGY.

AFRICAN METHODIST EPISCOPAL CHURCH. See METHODISTS, COLORED.

AGELARINE. See HORTICULTURE.

AGRICULTURAL BANKS. See AGRICULTURAL CREDIT.

AGRICULTURAL CREDIT. Among the most important constructive acts of the Wilson administration was the law establishing a system of Farm Loan Banks approved by the President in July, 1916. This law divided the country into twelve Federal Land Bank Districts with one land bank for each district. These banks are situated respectively at Springfield, Mass.; Baltimore, Md.; Columbia, S. C.; Louisville, Ky.; New Orleans, La.; St. Louis, Mo.; St. Paul, Minn.; Omaha, Nebr.; Wichita, Kan.; Houston, Tex.; Berkeley, Cal.; and Spokane, Wash.

The entire system is supervised by the Federal Farm Loan Board of five members with the Secretary of the Treasury as ex-officio chairman. Each of these banks started with 150,000 shares of $5 each. Any stock not taken by individuals or firms was taken by the United States or State governments. The banks purchase first mortgages which do not exceed in amount 50 per cent of the appraised value of the land plus 20 per cent of the insurable value of the permanent improvements by which they are secured. They may not bear more than 6 per cent interest. These mortgages are issued on an amortization or partial-payment plan which provides that the semi-annual payments shall cover not only interest but a portion of the principal, so that the entire loan is extinguished by uniform payment over a definite period of years. They may range in value from $100 to $10,000. To secure funds the banks issue farm loan bonds in amounts of $25, $100, $500, and $1000 bearing not over 5 per cent and free from all forms of Federal, State, or local taxation. Thus the bonds secure additional funds which are used in purchasing additional mortgages, the interest from which pays the interest on the bonds as well as the administrative expenses. Loans are made only through farm loan associations composed of ten or more farmers desiring loans aggregating at least $20,000; or in the absence of such associations, through special agents. The associations must subscribe 5 per cent of their loan toward the capital stock of the land bank of their district, such subscriptions being used to retire the original stock. Thus the banks will in the course of time become distinctly coöperative institutions controlled by associations of the farmers who profit by the bank's credit facilities.

Applications from farm loan associations up to August 1, aggregated $100,000,000, though the loans actually completed at that time amounted to only $3,940,400. Thereafter loans were made at an accelerating rate. The slowness attending the inauguration of the system was due to the lack of experienced men and a great variety of technical difficulties connected with farm titles. The Farm Loan Board advocated a uniform system of title registration. In July it was announced by this board that arrangements had been made with the banking houses of Alexander Brown and Sons of Baltimore, Brown Brothers and Company of Philadelphia, Harris, Forbes and Company of New York, and Lee, Higginson and Company of Boston, as a syndicate with branches and agents in every land bank district to market at least $30,000,000 of farm loan bonds. These bonds bearing 4½ per cent interest found a ready market at 101½ plus accrued interest. It was estimated that by the end of the first year at least $100,000,000 of these bonds would have been issued. Those issued in 1917 run for 20 years and are redeemable at par plus interest on any interest date after five years. They are in all denominations permitted from $25 to $1000; they are coupon bonds exchangeable for registered bonds which are in turn convertible into coupon bonds again. Interest is payable semi-annually, May 1 and November 1, at any land bank, but bonds are redeemable only at the bank of issue. Mortgages on which these bonds were based bore 5 per cent interest and were to be amortized over a period of 36 years by semi-annual payments equal to 6 per cent of the original principal. More than three-fourths of the States were represented in loans approved by July 1, while the largest loans had been made in Texas, Oklahoma, California, Kansas, Colorado, Washington, New Mexico, Montana and South Carolina. At least 2000 incorporated farm loan associations were formed in 1917.

The demand for the farm loan bonds exceeded the supply. This was shown by the sale in this country of large amounts of the holdings of British and Scotch mortgage investment companies. The situation was due in part to the prosperity of American farmers who were paying off mortgages and demanding a smaller amount of new loans at the time when investors were most eager to extend loans, and in part to the fact that the interest rates demanded in some sections by the farm loan banks were deemed high. This latter situation raised the question whether, apart from the urgent necessities of war time, Federal credit aids would prove more efficient than the farm loan departments of banks, trust companies and farm loan companies. It was observed that enterprising bankers in various communities had adopted the policy of getting into close personal touch with farmers, and by assisting in the purchase of feed, fertilizer, blooded stock and implements had developed a considerable business in the way of personal and commercial loans.

While the farmers had not shown the eagerness for the credit facilities extended by the land banks which many had anticipated, it was pointed out that in well developed farm sections loans could already be secured for 5½ to 6 per cent and that the slight saving in interest rate would be largely offset by the difficulties of forming loan associations. On the other hand the system had brought the farmers immense advantages by way of more liberal treatment by private agencies. It was pointed out by critics that the act made no provision for financing the tenant, the landless man, or the farmers temporarily insolvent. Moreover the business of the land banks was distinctly that of furnishing farmers long-time credit for permanent improvements and consequently the personal and seasonal credits demanded by progressive farmers would still require the service of commercial banks. In discussing the effect of the land banks on savings banks, Mr. L. G. Robinson, head of the Springfield (Mass.) Federal Land Bank, showed that the plan of financing farmers by means of very long-time loans with the amortization feature prevented savings banks from entering this field in competition. The farm loan bonds, however, offered an attractive investment for savings bank funds. More than twenty States in 1917 made these bonds legal investments for savings bank, public, and trust funds.

That these banks mark a new era in American farming and will assist in raising it to the plane of trade and manufacturing is shown by the vast amount of mortgage business which these banks will ultimately control. Their loans are expected to displace $4,000,000,000 of existing farm mortgages and to reduce the interest rate from the average 7.4 per cent to 5 per cent, thus effecting an annual interest-saving of nearly $100,000,000. It has been pointed out that the total agricultural credits of the country are about $5,500,000,000 based on land valued at $40,000,000,000 and annual crops of at least $10,000,000,000. This credit has been extended by over 200 insurance companies, by over 18,000 banks, and by numerous private investors, estates, and institutions.

CANADA. Coincident with the inauguration of Federal agricultural credit in the United States the Province of British Columbia in May, 1916, authorized the formation of an Agricultural Credit Board. This had at its disposal $1,000,000 provided by the government at an original cost of 5½ per cent, to be loaned to farmers and secured by farm mortgages. After several hundred thousand dollars had been loaned at 6½ per cent, it was discovered that the cost, including interest and administrative expenses, amounted to 9½ per cent. Thereupon loans were stopped. Manitoba raised money for a similar purpose by the sale of 5 per cent "food bonds" and loaned the proceeds at 6 per cent on farm products on an amortization basis. Much doubt was expressed as to whether this plan was self-sustaining. Saskatchewan put into operation a similar plan. It sold 5 per cent 10-year bonds at par with provision for repayment at any time on three months' notice and loaned the proceeds to farmers at 6¼ per cent. Another Canadian development was the inauguration of a more liberal credit policy for established farmers by the banks. This plan included the granting of specified amounts of credit to individual farmers, interest to be paid only on the amount used; repayment was allowable at any time but not enforceable without twelve months' notice.

REFERENCES. Aside from various digests of the original Farm Loan Act made by banking houses and agricultural associations, and articles in the periodical press, the following books were published in 1917: L. G. Robinson, *Financing the Insolvent Farmer*, published by the National Agricultural Organization Society; and H. W. Wolff, *Coöperative Credit for the United States*.

AGRICULTURAL COLLEGES. See AGRICULTURAL EDUCATION.

AGRICULTURAL EDUCATION. AMERICAN AGRICULTURAL COLLEGES. The value of a national system of agricultural education in the country's welfare was demonstrated most strikingly during the year 1917 by the immediate response of the American agricultural colleges to the nation's call for help in mobilizing agriculture. Upon the declaration of war, there was put into operation immediately the greatest organization for food production and conservation that the world has ever known. The machinery for the purpose had been developed gradually during the past half century, beginning with the passage by Congress in 1862 of the land-grant act. The colleges through their divisions of extension and research and through direct coöperation with the Federal government constitute one large efficient machine. See AGRICULTURAL EXTENSION WORK and AGRICULTURAL EXPERIMENT STATIONS.

For the year 1916-17, according to the United States Bureau of Education, 27,803 students were enrolled in agricultural courses in the land-grant colleges (exclusive of those for the colored race). Of this number, 982, or nearly 4 per cent of the total, were engaged in graduate work; 16,189, or 58 per cent, were regular undergraduates; 836, or over 3 per cent, were special or unclassified college students; and 9796, or 35 per cent, were registered for courses of less than four years, but more than ten days in duration.

The enrollment for the year 1917-18 was smaller than that of the preceding year. The reduction was most conspicuous among upper classmen and graduate students, with a slight falling off in the entering class. The decrease was due to students entering military service or accepting positions in the interests of food production and conservation, and in no way indicated a declining interest in agricultural education. On the contrary, a growing interest was shown by the constantly increasing appropriations for maintenances and for buildings and equipment. Colorado during the year provided for a mill-tax levy for the erection of new buildings for a period of ten years, and increased appropriations for maintenance for its agricultural college.

Among other conspicuous appropriations for new buildings may be mentioned: Connecticut Agricultural College, $120,000; Delaware College, $514,000; Purdue University, $100,000; Iowa State College of Agriculture, $161,081; Maryland College of Agriculture, $515,000; Michigan Agricultural College, $200,000; Montana State College of Agriculture, $100,000; University of Nevada, $80,000; New York State College of Agriculture, $225,142; Oregon State Agricultural College, $115,000; Rhode Island State College, $80,000; University of West Virginia, $315,000. The State of Tennessee provided a million dollar bond issue for new buildings at the University.

Progress of the agricultural colleges is shown also in the gradual increase in the requirements for admission. Two in 1917 increased their entrance requirements so that now 47 out of 50 require a four-year high school course, or a minimum of fourteen units, for regular admission. Thirty-eight accepted at least four units for work on vocational subjects for entrance, and 17 insisted upon farm experience as a requirement for graduation, to be satisfied either before or after entering college.

Administrative relationships. Unlike other institutions of higher learning, the agricultural colleges were called upon to administer three lines of service approximately equal in importance—resident instruction, agricultural extension, and agricultural research. More or less confusion resulted from attempts to administer these three kinds of service through the traditional form of organization. As a result of the necessity for promoting agriculture along these three lines, large groups of specialists were engaged to work on each of the recognized agricultural subjects. In the process of development, the department, rather than the individual, had become the unit of organization. This condition has resulted in the development of large departments, which sometimes have been administered more or less autocratically; also, in some cases, in administrative conflict between the department head and the director in charge of the kind of service concerned.

With a view to obtaining a better understanding of administrative relationships, the Committee on College Organization and Policy of the Association of American Agricultural Colleges and Experiment Stations through the U. S. Bureau of Education, made a study of the subject. A complete report embodying fourteen recommendations was given in the association proceedings for 1917. These in brief were:

1. That the colleges should be organized on the basis of function rather than subject matter.
2. That the individual specialist capable of working independently should be regarded as the administrative unit and that all specialists engaged in each kind of service be administratively responsible to the director of the kind of service concerned.
3. That the group of specialists engaged in the work of a common subject, regardless of the kind of service, be regarded as a department.
4. That one specialist in each group should be selected as chairman, and that the members of the group be given a voice in such selection.
5. That the department organization be concerned only with subject matter.

Such a form of organization insures (a) unity in planning and prosecuting programmes, whether of resident instruction, extension instruction, or research; (b) the minimum conflict in teachings or recommendations concerning any subject; (c) a clear understanding of administrative relationships; and (d) the maximum of initiative and esprit de corps on the part of the individual workers.

FEDERAL AID FOR SECONDARY AGRICULTURAL EDUCATION. The most conspicuous advance in the progress of agricultural education during the year was the passage by Congress of the Smith-Hughes Bill (approved February 23, 1917), which provided for coöperation with the several States and appropriated money for the promotion of vocational education in agriculture, trades and industries, and home economics. In its relation to agriculture the bill provided for coöperation in paying the salaries of teachers, supervisors, and directors of agricultural subjects, and for this purpose appropriates $500,000 for the year ending June 30, 1918, and gradually increasing amounts each year until 1926, when the mature annual appropriation of $3,000,000 becomes available. The money was allotted among the States in proportion to their rural population.

Provision was made also for coöperation with the States in preparing teachers of vocational subjects including agriculture. For this purpose the initial appropriation was $500,000, which was to increase yearly until 1921, when $1,000,000 annually would become available. These sums were allotted to the States in proportion to their population.

The allotments in both cases were conditioned upon the expenditures of an equal amount by the State. Each State must also provide a State board, which is required to submit to a Federal Board for Vocational Education an acceptable programme for the promotion of vocational education, including the preparation of teachers. The administration of the act was vested in this Federal board, consistng of seven members, including the Secretaries of Agriculture, Commerce, and Labor, and the U. S. Commissioner of Education, as ex-officio members, and three others appointed by the President and confirmed by the Senate. The appointed member representing manufacturing and commerce was Mr. James P. Munroe, of Boston, a graduate of the Massachusetts Institute of Technology, a manufacturer, and a former president of the National Society for the Promotion of Industrial Education; representing agriculture is Mr. Charles A. Greathouse, a farmer of Posey County, Indiana, and a former State Superintendent of Schools; and representing labor, Mr. Arthur E. Holder of Iowa, formerly legislative representative of the American Federation of Labor. The chairman of the board was David F. Houston, Secretary of Agriculture, and the secretary was P. P. Claxton, U. S. Commissioner of Education. The executive staff consisted of C. A. Prosser, director; L. S. Hawkins, assistant director for agriculture; L. H. Carris, assistant director for industrial education; Miss Josephine T. Berry, assistant director for home economics; C. H. Winslow, assistant director for research.

For purposes of administration and inspection the country was divided into five sections, each with a representative of the Federal board. The regional headquarters and the respective representatives for agricultural education were as follows: North Atlantic—New York City, R. W. Heim; Southern—Atlanta, C. H. Lane; North Central—Indianapolis, J. A. Linke; West Central—Kansas City, W. F. Cramer; Pacific—San Francisco, W. G. Hummel. Forty-seven States had accepted the provisions of the act by the close of the year.

TEACHER TRAINING COURSES IN AGRICULTURE. The progress in the development of teacher training courses in agriculture during the year was shown in Bulletin 38 (1917) of the United States Bureau of Education which indicates that 40 out of 48 of the agricultural colleges offer courses for this purpose, and that the remaining institutions are now planning courses in response to the financial assistance offered by the vocational education act. The bulletin showed also that 841 men and 18 women were registered for teacher training courses in agriculture during the year 1916-17. From 35 institutions reporting, 513 students were graduated with special training in agricultural education in 1916. Of this number, 229 were known to be engaged in either teaching or directing agricultural work in the schools.

AGRICULTURE IN THE HIGH SCHOOLS. The progress in secondary agricultural education was indicated by Bulletin 34 (1917) of the U. S. Bureau of Education. It listed 3772 public and private schools of strictly secondary grade giving instruction and a total of 74,154 pupils studying agriculture.

AGRICULTURAL EDUCATION FOR NEGROES. A comprehensive report was just issued on negro education in the United States, a result of several years' investigation on the part of the Bureau of Education in coöperation with the Phelps-Stokes fund. It described the facilities for agricultural education among the colored people. Eighty-five schools of all grades, and including the land-grant institutions, offered instruction in agriculture. The total income of these schools was $2,013,155; they owned 23,940 acres of land, of which only 10,929 acres were under cultivation. The total value of the school plants, including land, was $1,766,557. The combined teaching force numbered 1828, of which 115 were teachers of agriculture.

The report stated that "the present equipment and teaching force provide little more than a beginning in rural education," and made recommendations for extending the instruction and training teachers.

AGRICULTURAL EXPERIMENT STATIONS. Entrance into the war had the effect of putting the experiment stations of the United States in 1917 in quite large measure upon a war basis. Like other departments of the land-grant colleges, they responded promptly, taking positions of responsibility and leadership, and adapting their work to the needs of the emergency. To a very large degree it was their work and teachings in the past which enabled the nation-wide campaign to be set in motion for stimulating and assisting farmers to greater production, providing protection from insects and disease pests, and the more effective utilization of products. In several cases the directors assumed prominent positions on the State councils of defense, in the local food administration, and on commissions for adjusting agricultural difficulties; and in general they early placed themselves in close coöperation with the agencies dealing with food production and supply. How important a resource these institutions constituted was pointed out by the Secretary of Agriculture in his report for the year. Generations ago the American people had wisely laid the foundations of these agricultural institutions and had given them increasingly liberal support. It was this which made possible the prompt and effective handling of the situation.

The forces of the experiment stations, like those of other institutions, suffered heavy loss by enlistment in the army and for other war service. Relatively few exemptions from military service were granted to station employees. The losses from draft and resignation seriously crippled the stations and great difficulty was experienced in recruiting their forces.

A new experiment station was authorized for Alaska, which was located in the Matanuska Valley, one of the most promising agricultural tracts in the Territory that was being opened up by the new government railroad. Provision was made for a new high altitude substation in Idaho, to be located in a region of 6000 feet or higher. Massachusetts provided for the maintenance of a market garden substation, located at Lexington, the purchase of land for which had been previously authorized. The system of test farms in North Carolina, conducted under the State Department of Agriculture, was developed into substations of the main station at Raleigh, thus extending to important regions the opportunity for experimenting in such subjects as muck land farming, truck farming, grain and orchard crops, etc. A new experiment station for middle Tennessee was authorized, the State granting up to $100,000 for buildings and the county in which the station was located bonding itself for $100,000 to purchase a suitable farm. The new station will receive $10,000 a year from the State, as will the central station and the one in west Tennessee. In Texas, the State appropriated over $400,000 for the next biennium for the maintenance and development of the main station and the system of branch stations covering the State. A new administration building for the station was being erected at a cost of upwards of $85,000.

One of the largest and most complete dairy buildings, to serve the needs of both the college and the station, was dedicated in Nebraska early in the spring. New agricultural buildings were completed or in process of erection in Delaware and West Virginia, and in the latter State the station received a gift of an estate of over 900 acres, well equipped with buildings and a large herd of pure-bred Ayrshires, the total value being about $120,000.

In an attempt to determine the areas in Canada suitable for flax and hemp, field experiments were conducted at various points and an experimental flax mill was erected at the experimental farm at Ottawa. Research laboratories for special studies of grain rust were established at important points. A new experimental farm was established at Morden in south Manitoba, to be devoted to work in horticulture on a larger scale than heretofore at any of the prairie stations.

In the Philippines a permanent tobacco experiment station was established in the Upper Cagayan Valley. A law recently enacted in Colombia provides for a series of stations for the benefit of agriculture; and in Venezuela a presidential decree established an experiment station for agriculture and forestry, with an acclimatization garden, to be located at Caracas. The agricultural institute of Alnarps, Sweden, was reported to have provided buildings and land for extending the studies in plant heredity under H. Nilsson-Ehle. Such studies were regarded as of the greatest importance at the present time in the interest of more efficient food plants. Italy was to provide a national institute to investigate the relations between malaria and agriculture, the direct and indirect causes of unhealthiness of malarial districts, and the organization of campaigns against these causes.

AGRICULTURAL EXTENSION WORK. The coöperative extension work in agriculture and home economics carried on in the United States under the Smith-Lever Act of May 8, 1914, and other Federal and State legislation in all the States, was greatly expanded during 1917. This was partly due to the annual increase of the Smith-Lever funds by $1,000,000 and of other State and county contributions, but also to the large amount of additional Federal funds provided in the Food Production Act of August 10, 1917.

Early in the year the evident need of increased food production and conservation led to unusual efforts in these directions by the extension forces throughout the country. Largely through the early campaigns which they conducted the farmers were instructed regarding the necessity for increasing the acreage and yield of staple crops and both rural and city people were stimulated and aided in the making of home gardens. As soon as war was declared the Secretary of Agriculture held at St. Louis a conference of Department and Agricultural College representatives, with other agricultural experts, at which it was agreed that one of the most effective means for promoting the agricultural interests of the United States and its allies would be through the coöperative extension system expanded to reach every agricultural county.

Congress adopted this suggestion and incorporated it in the Food Production Act, which contains the following item: "For increasing food production and eliminating waste and promoting conservation of food by educational and demonstrational methods through county, district and urban agents and others, $4,348,400." The Secretary of Agriculture allotted this fund to the States Relations Service with instructions to enter into agreements with the State agricultural colleges to expend it, in conjunction with other extension funds, on the work of the three classes of agents for whose support it was understood Congress had made the appropriation, namely (1) county agricultural agents (men), (2) county and city home demonstration agents (women), and (3) leaders of boys' and girls' clubs.

Other bureaus of the Department of Agriculture received funds under this Act for coöperative extension work. In the Bureau of Animal Industry, the Animal Husbandry Division, coöperating with the Bureau of Markets, was to aid in live stock production, including poultry. The Veterinary Division was to provide extension agents to give instruction on animal diseases, especially hog cholera. The Dairy Division undertook to stimulate the production and use of soft cheeses and the utilization of creamery by-products. The Bureau of Plant Industry made arrangements to aid in the control of plant diseases, particularly those of wheat, oats, barley, rye, potatoes, beans, and truck crops. There were also funds for work in sweet and Irish potatoes and peanuts and on the canning, drying, and evaporating of vegetables and fruits. Seed supplies were to be safeguarded by a fund for the purchase, storing, and sale of seeds. The Bureau of Entomology attempted to meet emergencies regarding insect pests in different parts of the country. The Department was also enabled to do a large amount of emergency publication work, the results of which were available to the extension forces.

The States, counties, and local communities joined cordially with the Department of Agriculture in putting into effect the Food Production Act and made substantial money contributions. The last four months of 1917 witnessed great activity in enlarging and more thoroughly organizing the extension forces throughout the country, and getting them ready for rendering a broader and more effective service relating to food production and conservation during 1918. The force of men agents permanently located in counties on July 1, 1917, was about 1400. At the end of 1917 about 2000 regular and emergency agents were at work in single counties or in larger districts.

During the year over 2500 community organizations of farmers, with a membership of 78,600, had been directly organized by the county agents in the 15 Southern States. In addition, granges, farmers' unions, and church and civic organizations, with about 125,000 members, assisted these agents. About 120,000 farmers conducted demonstrations under the supervision of the agents, on over 2,000,000 acres. Through the influence of the agents 220,000 acres were drained, 460,000 acres were terraced, and 81,000 pieces of improved farm machinery were purchased. Over 4000 silos were constructed and manure was saved on 45,000 farms. Over 100,000 pure-bred or high-grade animals were purchased and 2,500,000 animals were tested for various diseases. The agents made over 800,000 visits to farmers and held 12,000 field meetings. Special efforts were made to hold the acreage of cotton planting within reasonable limits and increase the planting of food and feed crops, with the result that the South obtained unusually large crops of corn, soy beans, velvet beans, cowpeas, peanuts, sweet and Irish potatoes, etc. The corn crop in the 15 Southern States was over 960,000,000 bushels, or more than a fourth of the whole crop of the United States.

In the Northern and Western States over 100,000 farmers were enrolled in the county organizations, commonly called farm bureaus. Many thousands of field demonstrations were made with corn, wheat, oats, legumes, and potatoes, and in the spraying and other care of orchards, treatment of live stock for hog cholera, black-leg, and tuberculosis. The purchase of registered breeding stock, the testing and better feeding of dairy stock, installation of drainage and irrigation systems, home-mixing of fertilizers, and increased use of lime were among the things extensively promoted by the agents. Over 400 marketing and purchasing organizations were formed. As war emergency measures, surveys of supply of seeds, fertilizers, and labor were made, with resulting arrangements for obtaining needed seeds, labor, and tractors. Greatly increased acreage of spring wheat, corn, potatoes, buckwheat, soy beans, and the grain sorghums was brought about.

The women county agents, commonly called home demonstration agents, were actively at work in all the States. On July 1, 1917, there were about 535 such agents, principally in the Southern States. At the end of the year their number had increased to about 1200. In addition, about 100 agents were employed in the larger cities. Under the impulse of the war emergency there was an enormous expansion of the interest of rural and city women in home gardening, rearrangement of diets, economy in purchases and household management, and conservation of food by canning, drying, pickling, brining, and sanitary storage. The home demonstration agents gave assistance extensively along all these lines. On July 1, 1917, in the Southern States alone over 1,600,000 women and girls were enrolled for demonstration work in food production and conservation. Much attention was also given to home sanitation, use of labor-saving devices, combating of insect pests, care of children, and beautification of the home.

In the Northern States there was great activity in forming organizations through which the agents could work and in assisting existing organizations of women in their voluntary efforts to promote food conservation. It was hoped that the extension of this service into the cities would do much toward bringing country and city women into more sympathetic and mutually helpful relations.

The demonstration work for negroes in the Southern States was materially increased during 1917. On June 30, 1917, there were 66 men agents and 7 women agents carrying on work in thickly settled negro communities along practically the same lines as that among white people. Over 75,000 negro boys and girls were enrolled in clubs. In most States the negro agricultural colleges coöperated in this work.

In the boys' and girls' clubs over 500,000 regular members were enrolled in rural communities in 1917, and over 400,000 more in the cities were engaged in special war-emergency projects. Special emphasis was laid on home gardening, canning, and drying, but there were also numerous clubs engaged in growing corn, potatoes, peanuts, cotton, or other farm crops, raising pigs, poultry, or calves, making bread or other viands, sewing, making various articles used on the farm or in the home, etc. Several thousand club members attended short courses at the State agricultural colleges, many of whom were sent at the expense of the people in their communities because of the excellence of their club work. Much of the club work was done in close coöperation with the schools. The short courses in various branches of agriculture and home economics, often called movable or extension schools, were held throughout the country in increased numbers and were supplemented by numerous meetings of farm men and women.

The large force of extension specialists, with headquarters at the agricultural colleges, representing many branches of agriculture and home economics, were unusually busy, chiefly with matters relating to the war emergencies on food supply and conservation. These officers supplemented the work of the county agents, furnished them advice and assistance, gave instruction in the movable schools and meetings, prepared publications and answered inquiries. Specialists were also sent out by the Department of Agriculture and their number was greatly increased under the Food Production Act. Their work included such things as conservation of perishable products, control of plant and animal diseases and insect pests, purchase and distribution of seeds, promotion of pig and poultry clubs, stimulation of production of beef and dairy cattle and sheep, marketing of farm products, improvement and larger utilization of the farm woodlot. Farm-management demonstrations were conducted in twenty-seven States.

The general interests of the coöperative extension work throughout the country were promoted by two extension offices in the States Relations Service of the Department of Agriculture. The work in each State was administered by an extension director, with headquarters at the agricultural college, who was a joint representative of the Department and the college. The work within the State was supervised by State and district leaders of county agricultural agents, home demonstration agents, and boys' and girls' club work. The Federal, State, county, and city extension workers of all classes numbered about 5000.

For the fiscal year beginning July 1, 1917, the total fund available for regular extension work was about $7,620,000. Of this about $1,200,000 was derived from direct appropriations to the Department of Agriculture and $2,080,000 from the Smith-Lever Act, making the total Federal contribution $3,280,000. This was met by approximately $4,340,000 from sources within the States, including $1,600,000 to offset the equivalent allotment of Federal Smith-Lever funds, $530,000 from additional State appropriations, $200,000 from college funds, $1,544,000 from counties, and $444,000 from local organizations and miscellaneous agencies. About $3,834,000 was to be used for the demonstrations and other activities of the county agents. Much of their work bore directly on farm-home problems but $1,040,000 was allotted to distinctive work in home economics. More than $500,000 was to be used for work among boys and girls. Nearly $1,500,000 was devoted to the tasks of the specialists. In addition the funds for emergency extension work under the Food Production Act, with additional contributions within the States, aggregated about $5,000,000, making a grand total of $12,500,000 available for extension work in 1917.

Farmers' Institutes were held in 1917 under the management of the States departments of agriculture in eighteen States. The number of such institutes was 2951 (with 7338 sessions), with a total attendance of 982,377. In thirty States the institutes were managed by the agricultural colleges and were as a rule made a part of their extension work in agriculture. See AGRICULTURE; AGRICULTURAL EDUCATION.

AGRICULTURAL LEGISLATION. LEGISLATION IN THE UNITED STATES. The serious and ever-increasing strain put on the world's food supply by the prolongation of the war led to many important and far-reaching measures designed to stimulate the production of farm products. In the United States the Federal emergency legislation was comprised chiefly in two measures, both enacted on August 10, 1917. One of these was the Food Production Act described elsewhere (see AGRICULTURE). The second was the Food Control Act, under which the United States Food Administration was maintained. This act was designed to assure an adequate supply and equitable distribution of foods and fuel, and was very comprehensive in scope as regards the handling of products after leaving the farm (see Food and Nutrition). Farmers were particularly interested in the provisions regulating fertilizers, machinery, and feed stuffs, as well as that dealing with wheat prices. This section established for the crop of 1918 a minimum guaranteed price of $2 per bushel for No. 1 northern spring wheat or its equivalent at the principal interior markets until May 1, 1919, and authorized the President to fix a minimum guaranteed price at other times when deemed necessary. Another section appropriated $10,000,000 for purchases of nitrate of soda for sale at cost to increase agricultural production during 1917 and 1918. See Fertilizers.

The Selective Service Law specifically included agriculture among the industries for which persons found necessary to the "maintenance of the National interest during the emergency" might be exempted from military service. Exclusion of farmers or farm laborers as a class was not undertaken in the administration of the law, though many exemptions were made of individuals in the first levy, and a plan of deferred service for men actively engaged in farming was embodied in the questionnaire for the classification of registrants which was sent out in December. Several measures suspending or modifying some of the requirements of the homestead laws during the emergency were enacted. One of these allowed settlers under certain restrictions to leave their claims for farm labor elsewhere and to include this item as constructive residence on their own holdings.

Many States also enacted war legislation affecting agriculture. New York, Porto Rico, and Florida adopted food control laws, that of Porto Rico even authorizing the food commission to grow farm products. In Massachusetts municipalities were empowered to cultivate private lands, and restrictions on Sunday gardening were suspended. Penalties against theft or damage to farm crops and gardens were increased in New Hampshire and Pennsylvania, and trespass laws made more severe in Connecticut. School credit to students absent on farm work was allowed under certain conditions in Connecticut and New York.

The Federal Farm Loan Act of 1916 (see 1916 Year Book, article Agriculture) was amended by a bill passing the Senate December 18, 1917, providing for the purchase by the United States Treasury of $100,000,000 worth of farm land bank bonds at par and accrued interest. A similar measure was the unfinished business before the House of Representatives before its adjournment for the Christmas holidays. Montana and South Dakota provided for State loans on farm lands and a previous law went into effect in Oregon. County loans to farmers to buy seed were authorized in Minnesota. Dealers advancing supplies "on time" during the crop season in North Carolina were forbidden to charge over 10 per cent above their cash prices.

The Federal Stock Raising Homestead Act provided for entries of tracts as large as 640 acres on certain public lands chiefly valuable for grazing and raising forage crops. Prospecting for potash on the public lands was encouraged by Federal action, and a measure dealing with phosphate lands was under consideration at the close of the year. Oregon authorized the leasing of the kelp fields along its coast for potash production.

In Vermont a Commissioner of Agriculture replaced the Board of Agriculture and Forestry. North Dakota, South Dakota, and Utah adopted the Torrens system of land registration.

The so-called Smith-Hughes Bill, or Federal Vocational Education Aid Act, became law February 23, 1917. It authorized Federal appropriations rising from about $500,000 to a maximum of $3,000,000 per annum for coöperation with the States in paying the salaries of teachers, supervisors, and directors in agricultural instruction of subcollegiate grade, as well as like amounts for instruction in industrial subjects including home economics, and from $500,000 to $1,000,000 per annum for the preparation of teachers and supervisors along these lines. See Agricultural Education.

Canadian Legislation. The principal Canadian legislation of the year was the Soldiers' Settlement Act, designed to assist returned soldiers to settle on the land. This was supplemented by legislation in Ontario, Prince Edward Island, and British Columbia, under which lands will be reserved and put in shape and advances made if necessary for the purchase of land, tools, stock, etc.

Rural credits acts were adopted in Manitoba, Ontario, Saskatchewan, and Alberta providing for long-term loans on farm real estate, and in Manitoba, Alberta, and Nova Scotia for short-term loans for purchases of live stock, seed, grain, or farm machinery. The Dominion Live Stock and Live Stock Products Act regulated stockyards charges and practices.

European Legislation. Great Britain enacted a comprehensive measure known as the Corn Production Act, designed to foster agricultural production during the war. This act established an Agricultural Wages Board to fix minimum wages for farm labor. Another provision was for a system of arbitration to adjust disputes over the raising of agricultural rents. Many drastic regulations were also put into effect under the Defense of the Realm Act. Maximum prices were established for the 1917 crop of wheat, rye, oats, and barley, as well as meats and dairy products, and a minimum price guaranteed for wheat, oats, and potatoes. The use of feeding stuffs was carefully regulated and seed grain supplies conserved. The cultivation of unoccupied or common lands, or in certain cases of neglected occupied lands, was empowered. See Agriculture.

Under a French law uncultivated lands may be requisitioned and cultivated by the local authorities. An appropriation of $60,000,000 was made for the agricultural restitution of the region recovered from the German invasion, this being available for tools, live stock, seeds, fertilizers, etc. In Holland the increasing scarcity of food led to a compulsory reduction in the acreage devoted to the less essential farm products. Tobacco growing was prohibited entirely.

Other Countries. A comprehensive series of inspection laws was enacted in South Africa. Peru adopted a rural credits law based on personal property. Many other countries adopted laws and regulations as to prices of farm products, as noted under Food and Nutrition.

AGRICULTURE. The progress of the war in Europe, the increasing gravity of the submarine menace, and the entrance of the United States into the war all tended to give increasing prominence to agriculture during the year 1917. Food supply and victory were more confidently and understandingly linked together than ever before. Food was classed as being as important as munitions, and a new understanding of the basic position of agriculture and the many factors involved in a sudden increase in production under the handicaps of the war became apparent. This was evidenced in the memorable speech of Lloyd George in February, who also declared that "whatever befalls, it will never again be neglected by any government."

When the United States entered the war, the world's food reserve was very low, distribution difficult, and most of the countries involved were largely dependent on outside supplies. President Wilson made an earnest appeal to the farming people to do their utmost, declaring that "upon the farmers of the country in large measure rests the fate of the war and the fate of the Nations."

BRITISH AGRICULTURAL POLICY. The dependence of the United Kingdom on imported food, amounting to four-fifths of its wheat and two-thirds of its food stuffs as a whole, resulted in increasing the cost of the war, complicated the problem of foreign exchange, and made heavy demands on the tonnage of the merchant marine when its services were greatly needed otherwise. This, with the increasing menace of the submarines, aroused Great Britain to a live agricultural policy which was developed and put into effect early in the year. This embodied a comprehensive scheme for increased agricultural production throughout the kingdom, including an enlarged and better use of land, through appeal and compulsory measures, supported by guarantee of minimum prices to the farmers for certain staples and assistance of various forms to the industry. The Lloyd George Government gave the country a new Minister of Agriculture, Mr. R. E. Prothero, a man of agricultural affairs; and a Food Production Department was organized in the Board of Agriculture and Fisheries with Sir Arthur Lee as director-general, and a food controller appointed.

An order relative to the cultivation of land conferred upon the board authority to take possession of any land not being so cultivated as to afford the largest practicable food production, and conduct it to that end, utilizing any buildings, machinery and implements, stock, etc., on the land, alter contracts of tenancy, etc. In turn, the board conferred upon all ruling councils—town, city, urban, and district—powers to take over and cultivate all commons and waste lands, of which there are said to be 20,000,000 acres in Great Britain, to direct grass land to be broken up or cultivated land to be used by the occupier in accordance with the county war agricultural committees, failure to comply constituting an offense under the Defense of the Realm Act. These committees were authorized to plow and apply fertilizers, when an occupier was not able, allowing reasonable time for repayment. Surveys were made of cultivated and uncultivated land, as a basis for action of the committees.

As a part of its policy, the Government guaranteed the following minimum prices for wheat, covering a period of six years; for 1917, 60*s.* per quarter ($1.74 per bushel); for 1918 and 1919, 55*s.* ($1.60 per bushel); and for 1920, 1921, and 1922, 45*s.* ($1.30 per bushel). A minimum wage for agricultural laborers of 25*s.* ($6.00) per week was announced.

Production Campaigns. In the prosecution of the campaign for increased food production there was greater organized and systematic effort than in any previous year of the war. In Great Britain the war agricultural committees were strengthened and extended, and were very active in seeing that land was properly employed for food crops, in many cases taking possession of improperly handled tracts or arranging for new tenants. In some sections of the country, for example, bulb growers were required to take up 25 per cent of their bulbs and substitute wheat, and also to plant 25 per cent of the land left in bulbs with wheat or oats between the rows; and growers of hops were required to reduce the area during the war to one-half that of 1914. These committees were authorized to purchase tractors, and arrangements were made through the war office for manning them, keeping them in repair, and supplying the necessary fuel and lubricants. Four schools were set up for training men in their operation. By the close of the year some 2000 tractors had been placed at the disposal of farmers in England and Wales, with the demand still increasing.

The formation of food production societies was also projected in every village and urban district, especially to promote intensive gardening and acquire land for the purpose. Food production by school children was also stimulated.

British farmers and land owners had been very loath to plow up their pastures and grass lands, and it took both argument and compulsion to bring this about. The director of the Rothamsted Experiment Station gave some striking illustrations of the greatly increased production of food from tilled land as compared with pasture. For example, land in potatoes produces nearly forty times as much food as medium grass land, while wheat land produces nearly eighteen times as much. An acre of these crops yields 15 cwt. of flour or 6 tons of potatoes, as compared with 1 cwt. of meat from an acre of grass. The Board of Agriculture showed that the grass land of the country was feeding about 20 persons per 100 acres whereas the same area of cultivated land feeds about 84 persons. Under the governmental policy adopted it was shown that land would give a greater return to the farmer under cultivation than in grass.

The British food controller fixed the maximum prices for the 1916 crop of wheat at the equivalent of $2.37 a bushel, of barley at $1.90, and of oats at $1.37. The minimum price fixed for the 1917 crop of wheat was $1.74 a bushel, and for oats $.88, while the minimum prices for potatoes ranged from $.85 to $.95 a bushel, according to time of delivery.

To further encourage the breaking up of permanent pasture and the growth of oats, the British Army Council offered a bonus of about 10 cts. a bushel over the food controller's fixed price, provided the growers would apply fertilizers at the rate of 25*s.* per acre.

As a result of these various measures, it was estimated that during the season an extra million acres of land had been put under the plow in Great Britain. To relieve the labor situation, the British Army Council extended the period of calling out men employed in agriculture, first set for January 1, 1917, until a complete review of the labor situation could be made on the basis of the agricultural census. Later it was announced that no man who prior or subsequent to June I was employed for his whole time in farm work of national importance should be called to the colors except with the approval of the county agricultural executive committee. Special provision was made during the summer to supply soldier labor, and draft horses and mules with drivers, for assistance in preparing land for fall crops. The temporary services of men in the home defense force were made available, selecting those of proper knowledge and fitness, and certain classes of the army reserve who, barring unexpected military exigencies, may remain in agriculture to the end of the war. These measures made available some 20,000 men.

Ireland. In Ireland, the scheme for increased production was in charge of the Department of Agriculture and Technical Instruction, and even more drastic measures were employed. Every farmer was required to till in 1917 an additional 10 per cent of his tillable land, failing which he was subject to a fine of £100 or imprisonment, or the Government might take over the land and re-let it to another tenant. The campaign was organized through the county committees of agriculture, of which there is one in each county in Ireland with a permanent paid staff, including a secretary, one or more agricultural instructors, horticultural instructors, in most cases instructors in poultry and buttermaking, and in some counties special tillage demonstators.

Prices for wheat, oats, and potatoes were guaranteed, provision made for securing the necessary supplies of seeds, fertilizers, implements and labor, and loans made for necessary purchases. In some districts where large areas of grass land were to be plowed up, tractors were necessary, and to secure these the Department made arrangements to control the distribution of new machines, requiring purchasers to hire them out if not needed all the time. Provision was made for furnishing advice on tractor operations, securing a supply of fuel, providing operators, and for keeping the tractors in repair. In addition, a certain number of tractors were retained under the Department's control which were hired out with drivers and plowmen.

As a result of these voluntary and compulsory measures large additional areas were plowed and cultivated in Ireland, estimated at an increase of 25 per cent, or about 700,000 acres.

France. The French organization for maintaining its agricultural efficiency was described as unusually complete and effective, working from the Minister of Agriculture through the directors of agricultural service in each department of the country, to the committee of agricultural action in each community. Under a law passed in the fall of 1916 the communes were authorized to requisition cultivable lands whose owners neglect to cultivate them, to be carried on under direction of the committees of agricultural action. The French Government had subsidized the purchase of expensive labor-saving machinery by coöperative societies or communes for collective use, to the extent of one-third of the cost, thus providing tractors for plowing and similar work, which were operated by war cripples. The railroads often gave reduced rates on such tractors, and sent them and their operators free of cost for demonstrations. The French government in 1917 offered a bounty on wheat growing equivalent to 16 cents a bushel, and an additional bounty of $1.60 per acre for areas in excess of 1916. A minimum price was fixed of $1.36 a bushel for barley and $1.32 for rye.

Argentina. Working in the interest of the international food production campaign, the agricultural department of Argentina distributed over two million bushels of seed wheat to more than 22,500 colonists in that country who were unable to obtain seed.

Agriculture in the United States. When the United States entered the war, on April 6, 1917, the country was facing an unsatisfactory situation in respect to its supply of food and feed stuffs. The reserve stocks of wheat were lower than at any previous time at that season, and the world's reserves were very low. Under competitive purchasing of all food products by foreign agencies on a large scale, manipulation and speculation were rife and prices were mounting rapidly. The immense drain upon American products was shown by the fact that while the United States had been exporting to Europe less than 100,000,000 bushels of wheat a year before the outbreak of the war, it jumped to 332,000,000 bu. in 1915, was 234,000,000 bu. in 1916, and in the fiscal year ended June 30, 1917, when the crop was abnormally small, it amounted to 203,578,609 bu. (including flour), the imports for that year being only about 25,000,000 bu.

The short food supply of the Allies and neutrals in Europe, and the fact that the wheat reserves of India, Australia, and Argentina were held back for lack of tonnage, made it evident that special reliance would be placed on the United States, and that every possible effort was necessary to meet the needs of the country and of Europe. Nation-wide agitation was set on foot for enlarged production of food materials, especially the bread grains, for extensive gardening to supply local needs, and for conservation of food of all kinds in every possible way.

Early in April a conference was called by the Secretary of Agriculture at St. Louis, at which the agricultural colleges and departments of agriculture of thirty-two States were represented. The entire agricultural situation presented by the emergency was discussed and a comprehensive programme of action was adopted. This programme provided for a central agricultural body in each State, to mobilize its agricultural resources and coöperate with the Federal Department of Agriculture in prosecuting and assisting a vigorous production campaign. It also contemplated a survey of the food, labor, and other resources of the country, the fixing of prices of certain products in order to furnish assurance to farmers, and certain necessary Federal legislation.

The latter was embodied in two separate

acts, known as the Food Production Act and the Food Control Act, which became effective August 10. The Production Act appropriated a total of $11,364,400, and extended the functions of the government in many ways, enabling an enlargement of the agricultural extension work (see AGRICULTURAL EXTENSION WORK), providing for food surveys, assistance in marketing and distribution, the supply of seeds, combating insect pests and plant diseases, stimulating the production of live stock, meat supplies, etc. The Food Control Act conferred very broad powers, authorized the fixing of prices to stimulate production and prevent extortion, and the general regulation of food and its distribution. See AGRICULTURAL LEGISLATION and FOOD AND NUTRITION.

Under authority granted in the Food Control Act, a Federal Grain Corporation was organized which took over the purchasing of wheat for export and controlled the margin of profit among trading, milling, baking, and distributing factors. To finance this enterprise, Congress made an appropriation of $150,000,000. The stock of the corporation is all owned by the government. All flour mills producing 100 barrels a day or more were required to be licensed and to purchase their wheat through this corporation or under its regulations. No other agency was authorized to export wheat.

Under the stimulation of purchases by the allied governments, May wheat had gone to $3.18 on the Chicago Board of Trade, when the directors discontinued trading. The Food Administration determined upon a price of $2.20 a bushel for the 1917 wheat crop, based on No. 1 northern spring wheat or its equivalent in the principal interior markets, with a system of differentials between zones and between different grades and classes, and on this basis the Federal Grain Corporation began September 4 to buy and distribute the wheat crop of the United States. The effect has been to stabilize prices, to reduce the cost of wheat and flour, and to give farmers assurance of what could be expected. The price fixed by the Food Control Act for the 1918 crop, continuing until May, 1919, is $2 per bushel.

THE 1917 HARVEST. Probably never in modern times was there such widespread consideration of the prospective food supply of the world as in 1917. This was intensified by the announcement early in the year that the prospect for the world's food crops was insufficient and the situation alarming. This was largely borne out by the final returns. Such returns as were available near the end of the year are shown in the accompanying table. No data then had been published for the countries of the Central Powers.

In most of the countries at war the production of cereals fell off materially, in spite of efforts to keep up the area and yield. It was evident that under the pressure of war, Europe was fast declining in productive power. The International Institute of Agriculture reported that the production of wheat, rye, and barley was below the average, wheat in the countries exclusive of the Central Powers being estimated at 15 per cent below the five-year average. The crops of corn, oats, potatoes, and rice, however, were considerably above the five-year average, and except in the case of rice were from 15 to 35 per cent larger than in 1916. The wheat crop of India was estimated at about 5 per cent above the average and 19 per cent above 1916.

Great Britain had the largest crop of potatoes ever produced, estimated at a million and a half tons more than the average for the previous ten years. Canada succeeded in materially increasing its area under wheat, despite the wholesale withdrawals of labor for the army. While definite data were lacking for Russia, the indications were that all cereals were below the average, amounting for wheat to 20 per cent. The enforced leasing of land to peasants, which was formerly worked by the landowners, resulted in lack of skilled methods and good seed being employed, the effects of which were reflected in a decreased yield. Press reports gave an estimated decrease in the yield of wheat in the Central Powers of 40 per cent, and of 45 per cent for rye, oats, and barley.

The United States produced record crops of corn, oats, rye, potatoes, and tobacco; the rice crop was the second largest produced in this country, and the barley crop has only twice been exceeded. Although the wheat crop was disappointingly light, the aggregate returns for all cereals represented an increase of approximately one billion bushels over the five-year average. The bean crop was nearly 50 per cent greater than in 1916. There was the largest production of perishables on record. The area of rye was increased about 50 per cent over the five-year average and of barley about 10 per cent. The area in corn was increased about 14 per cent. See also individual crops such as WHEAT, POTATOES, etc.

CONSERVATION AND CONTROL MEASURES. Food control measures in various countries are described in the articles FOOD AND NUTRITION and FOOD CONTROL. In further regulation, the use of barley or other cereals or food materials for the production of liquors was prohibited in the United States, Canada, and Great Britain (see LIQUORS). The United States Internal Revenue figures show that in the fiscal year 1916 no less than 107,781,415 bu. of grain were used in the manufacture of fermented and distilled liquors. The cultivation of hops was restricted in Great Britain and buying or selling was made subject to permit by the food controller.

Various measures were enforced to provide suitable supplies of seed. An order issued in August in England and Wales prohibited the use for other than seed purposes of any of the 1917 crop of winter oats up to November 1, of winter beans up to December 1, or of rye up to January 1, 1918, except upon authority of the food controller. The use of seed potatoes for any other purpose than seed, and the sale or purchase of seed potatoes except through authorized purchasers was prohibited in Great Britain.

Flax growers in Ireland were required to save seed from one-eighth of the total crop, the seed to be sold only to persons authorized by the Department of Agriculture complying strictly with its regulations. The British Government took possession of all flax for aëronautical supplies, fixing the price for different grades and forbidding sale or purchase except through the Government. In July, the British food controller forbade the purchase or sale without a permit of any wheat, barley, rye, or oats of the 1917 crop, or any potatoes except

ESTIMATED PRODUCTION IN 1916 AND 1917 OF WHEAT, RYE, OATS, BARLEY, AND MAIZE IN BUSHELS

(For countries named)

	Wheat		*Rye*		*Oats*		*Barley*		*Maize*	
	1917	*1916*	*1917*	*1916*	*1917*	*1916*	*1917*	*1916*	*1917*	*1916*
United States	650,828,000	636,318,000	60.145.000	48,862,000	1,587,286,000	1,251,837,000	208,975,000	182,309,000	3,159,494,000	2,566,927,000
Canada	231,730,000	220,367,000	4,240,000	2,896,000	393,570,000	351,174,000	51,684,000	41,318,000	6,193,000	6,271,000
Argentina	....	172,620,000	....	2,008,000	....	75,280,000	2,163,000	....	....	161,183,000
Chile	....	21,145,000	....	....	....	....	....	....	....	....
Uruguay	....	8,167,000	....	1,000	....	2,283,000	....	115,000	....	....
Austria	....	110,712,000	....	110,300,000	....	164,000,000	....	76,000,000	....	14,900,000
Hungary	....	169,470,000	....	58,080,000	....	90,000,000	....	74,600,000	....	195,000,000
Belgium	....	14,864,000	....	23,000,000	....	42,600,000	....	4,338,000	....	....
Bulgaria	....	38,241,000	....	8,490,000	....	7,372,000	....	14,739,000	....	27,875,000
Denmark	....	6,040,000	....	10,580,000	....	42,280,000	....	22,306,000	....	....
France *a*	143,978,000	218,214,000	27,581,000	35,524,000	237,447,000	246,158,000	....	37,778,000	....	20,000,000
Germany	....	151,800,000	....	445,672,000	....	592,050,000	....	153,430,000	....	....
Greece	....	....	....	....	....	....	....	....	....	....
Italy	139,834,000	176,529,000	4,464,000	5,342,000	29,892,000	26,188,000	7,417,000	10,102,000	86,680,000	78,736,000
Netherlands	3,448,000	4,034,000	11,967,000	12,391,000	18,595,000	22,240,000	2,572,000	2,495,000	....	....
Norway	241,000	305,000	656,000	729,000	11,827,000	10,920,000	2,999,000	3,026,000	....	....
Portugal	....	7,348,000	....	....	....	....	....	....	....	....
Rumania	....	78,520,000	....	4,075,000	....	28,938,000	....	30,038,000	....	148,000,000
Russia (Europe)	....	595,419,000	....	840,000,000	....	869,960,000	....	442,381,000	....	71,989,000
Russia (Asia)	....	151,000,000	....	32,714,000	....	107,700,000	....	36,770,000	....	15,800,000
Serbia	....	....	....	....	....	....	....	....	....	....
Spain	140,920,000	152,829,000	24,884,000	31,436,000	33,050,000	34,948,000	76,698,000	84,372,000	27,580,000	26,570,000
Sweden	7,487,000	8,099,000	15,760,000	26,000,000	70,760,000	84,000,000	12,255,000	14,344,000	....	....
Switzerland	4,550,000	3,821,000	1,753,000	2,170,000	4,603,000	6,794,000	712,000	629,000	252,000	157,000
Turkey (Europe)	....	....	....	....	....	....	....	....	....	....
Turkey (Asia)	....	....	....	....	....	....	....	....	....	....
United Kingdom	63,748,000	62,371,000	....	....	248,740,000	186,040,000	60,168,000	54,984,000	....	....
British India	378,781,000	318,005,000	....	....	....	....	....	....	....	....
Japan	26,500,000	24,444,000	....	....	....	5,016,000	76,458,000	99,822,000	....	4,102,000
Algeria	28,945,000	34,925,000	2,400	....	18,258,000	18,685,000	32,268,000	45,375,000	....	485,000
Egypt	29,800,000	36,540,000	....	....	....	....	13,590,000	18,175,000	....	68,875,000
Tunis	6,955,000	7,165,000	....	....	3,996,000	2,067,000	8,262,000	6,889,000	....	228,000
Australia	....	185,284,000	....	....	....	17,127,000	4,186,000	....	....	8,769,000
New Zealand	....	7,294,000	....	....	....	7,894,000	1,270,000	843,000	....	850,000

a Not including invaded territory.

the first and second earlies. All contracts previously made were declared annulled. Australia took over the whole wheat production under government control.

Canada removed its tariff on wheat and wheat products in April, which had the effect of automatically removing the United States duty on imports of Canadian wheat, thus permitting the free movement of wheat from that country. In Great Britain, the former requirement of a yield of 76 per cent of flour from wheat was increased by at least 5 per cent, to be accomplished either by closer milling or by the addition of flour from barley, maize, rice, or oats. A further addition of 5 per cent was permitted, thus giving a return of 86 per cent of flour for the wheat milled. Italy promulgated a milling requirement of 85 per cent of flour, and prohibited the taking from wheat of any other substance than bran.

A director of feeding stuffs was appointed in Great Britain to organize the supply and distribution of oil cakes and other cattle feeds, and regulations were issued as to feeds which might and might not be fed to stock. A horse-rationing order was issued in September, restricting the amounts and kinds of feed to be fed to horses except those of the army and those used exclusively for agricultural purposes; and in England and Wales the sale of horses used or suitable for the cultivation of land was prohibited except under license.

The feeding of game birds on grain or other materials suitable for human food was forbidden, and the Board of Agriculture was authorized to kill and dispose of game birds and extend the time for taking pheasants, wild ducks, and other migratory birds.

The German Agricultural Council published during the year lists for farmers of prohibited and allowed feeds for stock. The lists excluded nearly everything which might possibly be used for human food except barley, oats and root crops, in restricted amounts.

Production Programme for 1918. While food production viewed from a world standpoint gave evidence of an adequate supply from the 1917 crop, the lack of tonnage and the increased risk in bringing such staples as wheat from the distant fields of India and Australia emphasized the necessity for extraordinary effort in other countries. The United States and England especially made unusual preparations for the harvest of 1918. For the first time in its history, the United States adopted a definite agricultural programme, made with reference to meeting in even larger measure the needs of its European allies. This programme was drawn up after a thorough study of the situation by its officers and experts, in consultation with specialists from the various States. It called for the fall planting of about 47,337,000 acres of winter wheat and 5,131,000 acres of rye. The aim in the case of wheat was the production of a billion bushels in 1918, and the tentative figures for seeding spring wheat were left until the condition of the winter crop could be determined.

The area contemplated would require an increase of about 15 per cent for all wheat and over 50 per cent for rye. The increased acreage was apportioned among the States, and campaigns were conducted through the extension forces and other agencies to secure the seeding of these areas. The fall of 1917 was unfavorable to carrying out the Department's programme for wheat and rye to the full extent. It was estimated, however, that over 42,000,000 acres had been seeded to wheat, the largest ever sown. The area of rye seed is over 6,000,000 acres, nearly 37 per cent more than in 1916. The programme adopted for other crops involved an increase of about 5 per cent in oats and decreases of 6 per cent in barley and 8 per cent in corn (maize). Programmes for spring seeding of cereals and other crops are to be issued.

In Great Britain the Prime Minister announced in June the official programme for bringing about 3,000,000 acres more land under cultivation in England and Wales than was employed in 1916, showing that that country is thoroughly aroused to the danger of food shortage. This programme involved an increase of nearly 50 per cent in the area in cereals, beans, and peas, of 40 per cent in potatoes, and large increases in roots and other fodder crops. It involved the plowing up of about 2,400,000 acres of permanent and temporary grass, or an increase of nearly 30 per cent, and approximately one-eighth of the grass land. The amount was prorated among the counties, under the direction of the county agricultural executive committees, who were given power to enforce the requirement. The programme looks beyond 1918, and aims "to increase to the maximum the productions of food at the harvests of 1918, 1919, and 1920." For Ireland, the Government requirement was the bringing of 5 per cent more land under plow in 1918 than in 1917.

The cultivation of flax having become a military necessity, the Department of Agriculture in Ireland made a strong appeal to farmers to maintain the usual area, and to insure seed an order of the Army Council made it obligatory on Irish farmers to save the seed from one-eighth of the 1917 flax crop. This could not be sold except to persons licensed by the Department of Agriculture, which prescribes its handling, classification, and price.

In New Zealand, the purchase by the government of the wheat crop of 1917-18 was authorized, the price being fixed at $1.41 a bushel. Traffic in wheat was forbidden except under permission of the Board of Trade.

Farm Labor. The war accentuated the already serious shortage of labor on farms in the United States, the military service and manufacturing industries making large inroads on the supply. The government declined to exempt farmers and farm laborers as a class from the operations of the draft, but the new classification made at the close of the year apparently placed them in a somewhat more favorable position.

The Departments of Agriculture and Labor early in the year entered into coöperation, the former conducting a survey of the farm labor needed and the supply in rural districts, and assisting State agencies in organizing it; and the Department of Labor devoting its employment service to procuring and distributing workers not of the regular farm labor class. Many of the agricultural and other colleges closed early or released students to engage in agricultural work. In some of the agricultural colleges as high as 90 per cent of the undergraduate body had gone out into either military or agricultural service by the first of May.

Thousands of students took part in the wheat harvest. Foreign women were employed in market gardens and tobacco fields, and a movement was on foot to induce American-born women to offer themselves for farm work.

At the close of 1916 provision was made in England for employing civilian prisoners of war on farms not in prohibited areas. During the year large numbers of these prisoners were employed, the reports being generally very satisfactory. Lists of certified agricultural occupations were prepared by the Board of Agriculture, with a view to exemption from military service under certain conditions.

The work of women on the land became an increasingly important factor in England. Women workers were recruited through women's farm labor committees and a women's land army was formed on the initiative of the women's war agricultural committees. There were reported to be some 250,000 women engaged in agricultural work. The Board of Agriculture gave considerable attention to securing suitable conditions of service, with a view to attracting non-resident and town-bred women, the aim being to recruit as many as 40,000 from these sources. An appeal for women tractor drivers for plowing was issued late in the fall by the food production department, the need growing out of the unusually large amount of grass land which was being broken up. Considerable interest was developed in competitive tests of women land workers, representing a large number of counties. The women performed all kinds of agricultural operations, even to plowing, mowing, milking by hand and machinery, and the operation of motor tractors. Farmers expressed both pleasure and surprise at the work done.

High tribute has been paid to the women of France, who by common testimony have made a splendid showing of service "in the trench which is the furrow."

LITERATURE. The significant feature of the agricultural literature of the year, as a result of entrance into the war, was the tremendous output of popular emergency material of a new sort—exhortation and precept cast into pictorial, mimeographed, or printed form in bulletins, posters, circular letters, etc. National and State institutions and private organizations contributed to this endless variety of advice and appeal, the U. S. Department of Agriculture and the State agricultural colleges leading. Without attempting to enumerate these publications, a few summarizing the situation may be mentioned:

Report of the [*U. S.*] *Secretary of Agriculture*, 1917 (Washington, 1917); *Report of the Food* (*War*) *Committee of the Royal Society* (Command Paper Cd. 8421, London, 1917); John Hilton, "The Foundations of Food Policy" —a review of the report of the Royal Society Committee in *Edinburgh Review*, 1917, No. 461, pp. 28-50; T. B. Wood, *The National Food Supply in Peace and War* (Cambridge, 1917); W. Somerville, "Increased Agricultural Production," in *Blackwood's Magazine* (January, 1917); Joseph Johnson, *Food Production in France in Time of War* (Dublin, 1917).

AIRCRAFT. See AËRONAUTICS; MILITARY PROGRESS.

AIRPLANE. See AËRONAUTICS; MILITARY PROGRESS.

ALABAMA. POPULATION. The estimated population of the State in 1910 was 2,138,273, and on July 1, 1917, it was 2,363,939.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	4,825,000	77,200,000	$96,500,000
	1916	3,825,000	47,812,000	48,768,000
Wheat ...	1917	93,000	930,000	2,511,000
	1916	110,000	1,045,000	1,933,000
Oats	1917	540,000	9,720,000	9,914,000
	1916	600,000	10,500,000	7,875,000
Rice	1917	400	12,000	23,000
	1916	300	8,000	6,000
Potatoes .	1917	41,000	2,952,000	5,373,000
	1916	20,000	1,800,000	3,042,000
Hay	1917	1,448,000	*a* 1,158,000	18,760,000
	1916	400,000	440,000	5,720,000
Tobacco ..	1917	200	*b* 146,000	51,000
	1916	200	60,000	18,000
Cotton ...	1917	2,195,000	*c* 505,000	70,700,000
	1916	3,225,000	533,000	52,007,000

a Tons. *b* Pounds. *c* Bales of 500 pounds gross weight.

MINERAL PRODUCTION. Alabama ranks third in the production of iron ore, being surpassed only by Minnesota and Michigan. The total production in 1916 was 6,747,901 gross tons as compared with 5,309,354 gross tons in 1915. The total amount of ore shipped from mines in the State in 1916 was 6,801,839, valued at $10,843,231, compared with 5,134,955 tons valued at $6,789,266 in 1915, an increase of more than 32 per cent in quantity and more than 59 per cent in value. The output in 1916 was 18,086,197 short tons, valued at $24,859,831. This was an increase of 3,158,260 tons in quantity, and $5,793,788 in value compared with 1915. The number of employees increased from 22,591 in 1915 to 25,308 in 1916.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include the Confederate Soldiers' Home at Mountain Creek; the Alabama Industrial School for white boys at East Lake; the State School for the Deaf and Blind at Lineville; the Reform School for Juvenile Negro Law Breakers; a school for the negro deaf and blind; and insane asylums at Tuscaloosa and Mt. Vernon.

POLITICS AND GOVERNMENT. Alabama's most notable activities during 1917 were in connection with the war. The figures of Adj. Gen. G. J. Hubbard show that on July 1, 1917, there were 7651 enlisted men in the national guard and regular army from Alabama. Alabama's quota in the first selected draft was 13,614 men, of whom 5329 were white and 8285 negroes. These figures include no voluntary enlistments since July 1 nor do they include any enlistments at any time in the marine corps or the navy. Two national guard concentration camps were located in the State, Camp McClellan at Anniston and Camp Sheridan at Montgomery. An aviation field was also located at Montgomery late in the year.

The State has seen remarkable industrial development during the year, much of which is traceable directly to the war. The United States Steel Corporation in August appropriated $11,000,000 to the Tennessee Coal, Iron and Railroad Company, a subsidiary, to build plate mills and other units at Birmingham to supply material for ship construction. The Tennessee

1 TRACTOR PLOWING 2. HARROWING LAND 3. FEEDING CALVES

ENGLISH WOMEN IN AGRICULTURE

company had this work well under way at the close of the year. The Tennessee company formed the necessary subsidiaries, the Chickasaw Shipbuilding Company and the Chickasaw Land Company, which began the construction of a shipbuilding plant at Mobile. This plant will have ten ways at the beginning and will represent an additional investment of nearly $12,000,000. On October 7 natural gas in large quantities was discovered on the Aldrich dome eight miles south of Birmingham in the Cahaba River valley. Late in November C. H. Nesbitt, State mine inspector estimated that Alabama's coal production for 1917 would approximate 21,000,000 tons. This is against 18,324,625 tons for 1916, the largest previous production. A serious coal miners' strike involving approximately 22,000 men was averted in Alabama during the summer by the intervention of Secretary of Labor W. L. Wilson, who came to the district with Federal arbitrators and arranged a basis for the continuation of work. The Federal government during the year began the construction of an experimental plant at Sheffield for the manufacture of nitrogen from the air. Announcement was later made that the government would proceed with the development of the latent water power energy at Muscle Shoals near Sheffield, representing an expenditure of about $20,000,000. The plant is to recover nitrogen for use in the manufacture of explosives. Joseph H. Woodward, president of the Woodward Iron Company and the wealthiest man in Alabama, died at Birmingham December 15.

While the Democratic primary for the governorship and other State offices will not be held until 1918, four candidates for the executive office were already active in 1917. They were Lieutenant Governor Thos. E. Kilby of Anniston, W. W. Brandon of Tuscaloosa, John H. Wallace of Huntsville, and W. L. Teasley of Montgomery. A new feature in Alabama politics during the year was the injection of anti-Catholicism as a political issue. It was a striking feature in the campaign for city commissioners in Birmingham, the anti-Catholic ticket winning by big majorities on October 8. Platforms of the candidates for governor indicated that the issue would also cut a prominent figure in the contests for the executive offices of the State the following year.

LEGISLATION. The sessions of the State legislature are quadrennial, and none was held in 1917. There were no elections during the year, and no political events other than those noted in the paragraphs above.

STATE OFFICERS. Governor, Charles Henderson; Lieutenant Governor, Thos. E. Kilby; Secretary of State, John Purifoy; Auditor, M. C. Allgood; Attorney-General, W. L. Martin; Adjutant General, G. J. Hubbard; Treasurer, W. L. Lancaster; Superintendent of Education, W. F. Feagin; Commissioner of Agriculture, J. A. Wade; Commissioner of Insurance, C. B. Smith—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, John C. Anderson. Associate Justices, Thos. C. McClellan, J. J. Mayfield, A. D. Sayre, Ormond Sommerville, William H. Thomas and L. D. Gardner; Clerk, Robert F. Ligon.

STATE LEGISLATURE. Almost wholly Democratic.

ALABAMA, UNIVERSITY OF. Situated at University, Alabama. Students in the fall of 1917 numbered 1750, and there were 140 members of the faculty. Volumes in library, 40,000. Productive funds, $1,200,000; income therefrom $215,000. Founded in 1831. Co-educational and State institution. Departments: arts and sciences, education, medicine, law, and engineering. President, George Hutcheson Denny, Ph.D., LL.D., D.C.L.

ALASKA. The war conditions of the year materially interfered with the development of the Territory. Increased cost of fuel, advances in wages, shortage of labor, reduced transportation, and other enlarged expenses affected adversely gold mining—both lode and placer. Fortunately the expenditures connected with the railway construction by the United States relieved business depression to a considerable extent, while copper mining, stimulated by high prices, reached a maximum output in quantity and in value. The most surprising event of the year was the unequalled productivity of the salmon industry, which reached proportions and attained values far beyond the most sanguine estimates. Increased shipments of salmon late in the year, aggregating for the nine months ending September, 1917, more than $8,000,000 in value over the same period for 1916, indicated that the entire output for 1917 was in excess of $40,000,000, four times the value of the salmon pack ten years before. Among other material benefits to the Territory during the year were the restoration of the seal herd, the increase of the reindeer, the greater utilization of the forests, the development of coal mines, and especially the rapid progress of the government railway, which led to permanent settlements in the Cook Inlet region. The improved condition of the native population, the increase in education for the children in towns and districts, and particularly the constructive and progressive laws enacted by the Alaskan Legislature of 1917 were factors of special moral import.

POPULATION. The number of inhabitants was estimated at 75,000, of whom about 25,000 were natives. There was no increase in the number of incorporated towns, but several new towns were laid out by government survey and occupied along the railroad. The largest town, Anchorage, had a population of 5000 or more, while the towns of Matanuska and Nenana had several hundred each. The natives, especially in southeastern Alaska, were gathering into separate and locally governed communities, and availing themselves of the law of 1915 that permits citizenship and local government. In 88 villages there were gathered 9234 persons, mostly managing their own affairs.

LEGISLATION. The third session of the Alaskan Legislature, begun in January, 1917, was marked by the enactment of many laws of the most beneficial and progressive character. Among these were acts for a direct primary; the establishment at Fairbanks of the Alaska Agricultural College and School of Mines; for the detection of crime; granting allowances to mothers of dependent children; requiring licenses before contracting marriages; prohibiting the sale of tobacco in any form to minors; establishing evening schools for the training of uneducated alien applicants for citizenship; incorporating coöperative associations; organizing a fish commission; for the protection of natural spawning grounds; for the rescue of lost persons; creating a Board of Education;

for a system of public schools in towns and unincorporated districts; prohibiting the importation, manufacture, and sale of intoxicating liquors for sale or gift; for a national guard; for the preservation of public peace, prevention of sedition or other unpatriotic acts.

COMMERCE. The volume of shipments from and into Alaska during the fiscal year ending June 30, 1917, amounted in value to $121,265,947, being the largest in the history of the Territory, and in excess of the commerce of 1916 by $23,295,297. Domestic manufacturers from the United States showed an increase of about $12,000,000, of which machinery and hardware amounted to over $4,000,000, and provisions to over $2,000,000, beyond shipments of 1916. Shipments from Alaska in 1917 increased over those of the previous year by the sum of $11,970,000, due almost entirely to fish products, $4,200,000, and copper ores, $6,600,000. Shipments since July, 1917, increased by several millions over the preceding year, thus indicating a yet larger volume of trade for 1918.

FISHERIES. The report of U. S. Fish Commissioner H. M. Smith showed that all branches of the Alaska fisheries—except whaling and halibut—were more valuable during the year than ever before. In 1916 the fishery personnel numbered 23,994, an increase of 1532, while additional investments were made to the amount of $2,500,000 over that of 1915, bringing the sum up to a total of $39,570,000. The value of the fish products was $26,157,000, surpassing that of 1915 by more than $5,150,000. This extraordinary record was sure to be exceeded by the yield of 1917, which promised to approximate a value of $43,000,000. The minor products of the year were as follows: Halibut, $679,463; herring, $418,076; and whale, $363,721. An improvement was made in the curing of herring by using the Scotch method of drying.

SALMON INDUSTRY. The salmon continued to be the most valuable of the fishery products. It represented 88 per cent of the investments, and 92 per cent of the total values. In 1916 there were 100 canneries in operation, an increase of 15 during the year. The yield of the salmon fishery had never before been equaled, or indeed approached. The pack in 1916 reached the astounding total of 4,900,627 cases (48 1-lb. cans to a case), valued at $23,269,429. The total number of fish taken exceeded 72,000,000. The proportionate per cent of various kinds taken, arranged in the order downwards of the kinds as valued commercially, was as follows: Red (or sock-eye), 54; king (or spring), 2; cohoe (or silver), 6; humpback (or pink), 36; and chum (or Keta), 2.

The supply of salmon was maintained by the closing of natural spawning waters to fishermen, and through salmon hatcheries, of which there were two government and four private. In the calendar year 1916, 172,000,000 red or sock-eye salmon eggs were taken, and 39,000,000 humpback salmon eggs collected. The territorial law for the protection of natural spawning grounds was destined to give some of the much-needed care for this valuable fishery. Meantime the Secretary of Commerce closed to fishing on and after January 1, 1918, the following streams: Karluk River and Lagoon and all tributary streams; Bering River and all tributary streams, including parts of Bering Lake.

FUR SEALS. The North Pacific Pelagic Sealing Convention of July 7, 1911, between Great Britain, Japan, Russia and the United States continued in force and was rigorously observed. Under its provisions regarding closed seasons, the agreed specified payments were made to the contracting nations. The Act of Congress of August 24, 1912, forbidding for five years the taking of seals at the Pribilof rookeries, expired by limitation. The complete success of this legislation for the restoration of the herd is shown by the following data of seals counted at the Pribilofs: 1913, 268,305; 1914, 294,687; 1915, 363,872; 1916, 417,281, and 1917, 468,692. During the summer of 1917 128,024 pups were born, and there were bachelors and idle bulls to the number of 104,000 and more. When commercial sealing begins in 1918 the herd should number 600,000. Dr. Hugh M. Smith, U. S. Commissioner of Fisheries, said: "There is every reason why the herd should now be managed so as to satisfy legitimate demand for its natural economic products, at the same time producing an increased revenue for the government."

The United States has continued its policy of selling at public auction the skins of seals killed for food for the natives, which numbered 6466 in 1916. In 1917 there were sold 6379 skins for $269,665, the skins being dressed, dyed, and machined under methods initiated by the Secretary of Commerce. This success in handling the skins of seals used for food forecasts the policy of the United States, which undoubtedly will conduct the entire control of the seal industry, from the taking of the seal to the sale of its dressed skin. It may be added that under entire government supervision, the natives of the Pribilof group, which is a closed reservation, were prospering materially and improving morally. One-eighth of the entire population in 1917 had savings in the hands of the government, averaging $125 per person. Satisfactory experiments were made to utilize the old deposits of seal bones, etc., as fertilizers. There were in progress experimental methods for the preservation and canning of fresh seal meat as a food supply.

FUR-BEARING ANIMALS. Apart from the seals Alaska furnishes more than 180,000 pelts from its land animals. The principal skins for the years 1914, 1915, and 1916 were as follows: Bears, 802, 782, and 1189; ermine, 6873, 3538, and 4345; foxes, 23,343, 19,537, and 25,135; lynx, 6930, 9374, and 21,008; marten, 6497, 3028, and 3100; musk-rat, 101,202, 32,933, and 101,287; land otter, 1008, 980, and 1330. Owing to its diminution in numbers the taking of martens was prohibited until 1921. In the Pribilof group there were taken 39 white and 567 blue foxes. The average price of these skins at auction was $61.11, but four "extra fine dark" pelts brought $132 each. Fox-farming by private parties continues with moderate success in the valleys of the Chilkat, Copper, Tanana and Yukon, on the Shumagin islands and in the Afognak-Kodiak region. Under the orders of the Secretary of Commerce the taking or killing of fur-bearing animals is prohibited: Beaver until 1918; sea-otter until 1920; foxes (in the Afognak region only) until 1918; and marten until 1920. Except for destructive and dangerous animals a similar order was in force during the breeding season, as to all other animals.

Volcanoes. During 1917 Mt. Martin was added to the list of active volcanoes in Alaska. At times columns of steam and accompanying débris shot up to the height of a mile or more. This peak adjoins Mt. Katmai, the volcano that in 1912 blew off its head in the most violent eruption of modern times, which devastated 10,000 sq. mi. of territory. Katmai is yet active but in a modified form, its vast central crater, nine miles in circumference and 3000 feet deep, being in almost quiescent condition. The volcanic energy of the region is expended in other forms. Enormous fissures were visible over the country, with numberless fumaroles ejecting gases and ashes, and a mud river nearly twenty miles in length drains seaward the accumulated output of the fumaroles.

Reindeer. The reindeer industry, inaugurated in 1893, has proved to be of incalculable benefit to the natives of Alaska. It has inculcated thrift, encouraged industry, initiated self-dependence, and transformed thousands of roving, wretched hunters into intelligent pastoral communities. Most encouraging and interesting was the summary made by the Bureau of Alaskan Education of the expenditures, assets, and incomes of the reindeer industry. From 1893 to 1916 inclusive the United States had made appropriations aggregating $312,000. Meanwhile the income of the natives amounted to $470,837; the income of the Lapps and Missions was $146,926. The deer owned by the natives were worth $1,401,125, and by the Lapps and Missions $652,650. This made the net benefits $2,359,538. The annual benefits exceeded $400,000. It seemed certain that by 1918 the herds would exceed 100,000 head. The distribution of the 82,151 deer on June 30, 1916, was as follows: 1193 natives owned 56,045 animals; the Lapps and other whites, 17,530; the Missions, 5186; and the United States, 3390. Commercialism is seeking the control of the industry, and as a native cannot sell a doe to a white person the Lapps and Missions are appealed to. Unfortunately some of the Mission deer have been sold to the organized company, the sale being opposed by the Bureau of Education as these deer were given to the Missions for the benefit of the natives. The surplus male deer, of whom there are now thousands, are gradually slaughtered for hides and meat by the natives, and for the local market. It is possible that these herds may eventually furnish meat to the Pacific coast regions.

The deer have been introduced in all the regions of western Alaska from Point Barrow southward to the Aleutian archipelago, and to the Pribilof group. Deer are to be sent to the Copper River country and to the upper Kuskokwim Valley.

Natives. War conditions have in many cases caused the natives to resort almost entirely to local resources for food and necessities of life. That they have succeeded is shown by the fact that during the fiscal year 1916-17 only $2000 was spent in the relief of destitute natives, eight cents to a person considering the whole population. The segregation of the natives in self-ruling communities, on government reservations, has progressed steadily. Such villages are ruled by council, and in some instances conduct coöperative stores, do commercial business, have common gardens, and even operate saw-mills and canneries. The conditions at Metlakatla have materially improved: the fishery rights are assured and leased, while the coöperative cannery and other industries guarantee future prosperity.

The Alaskan Division of the U. S. Bureau of Education has continued its invaluable work through 70 schools, with an enrollment of 3600 pupils. The purely practical instruction has done much to uplift the natives, being confined to commercial matters, gardening, health, domestic science, manual training, and sanitation. The officials also afford medical relief, so needful for a people afflicted largely by trachoma, tuberculosis, and venereal diseases. The Bureau's agents have also established a system by which the furs and products of natives at remote stations are sold at public auction in the States and needful supplies bought at wholesale in return.

Governor Strong reports on the status and improvement of natives. The economic independence of the deer owners is assured. In steadily increasing numbers they are registering as citizens. Reports from 88 villages having a population of 9234 covers nearly 40 per cent of the natives in Alaska. Of the adults 26 per cent, and of the children of school age 60 per cent, could read and write. Among 5000 adults there were 118 captains and pilots, 53 engineers, 41 teachers and preachers, 119 carpenters, 59 miners, and 306 reindeer men. They owned among their large fleet 208 power boats, of 4.9 average tonnage, equipped with 8.4 average horsepower engines. The 9000 also owned 132 organs, 1837 bedsteads, 2078 clocks, and 1843 sewing machines. The civilization of the Eskimo in northwestern Alaska was illustrated by the issue at Nome of a new publication, *The Eskimo*, which was not only devoted to the interests of the natives but regularly published contributions in English written by Eskimos.

Roads and Trails. The development of the Territory depends as much, if not more, on roads and trails than on any single railway. Congressional appropriations and the Alaska Fund (made up from a fixed percentage of taxes, etc.), from which roads in the past have been constructed, are now supplemented by a territorial appropriation of $400,000. This amount has been allotted to the four judicial districts, $25,000 to be spent in each in the years of 1917 and 1918. The total road mileage on June 30, 1916, was: Wagon roads, 980; sled roads, 621; trails (flagged in winter), 2291. Work recently completed includes wagon roads on the Marshall, Ruby-Long, and Knit-Willow sections, and a winter trail from Nenana to the Kantishna country. It was anticipated that the road construction would soon pass entirely into the hands of territorial officials, a Territorial Road Commission having been organized. Three important bridges were built at an expense of $87,000, during the year, across the Tazlina and Snake rivers, and at Fairbanks across the Chena.

Railroads. The only railroads operated during the year were the Copper River and Northwestern, from Cordova to Kennecott; the White Pass and Yukon, from Skagway to White Pass; the Tanana Valley, from Fairbanks to Chatinika; and the Yakutat and Southern at Yakutat Bay. The Katalla Anthracite Railway Co. was constructing a railway, to be about 20 miles in length, from Controller Bay to the Bering River coal fields, for the development and utilization of patented coal lands in that section.

The important railroad operations, however, pertained to the United States railway under construction from Seward to Fairbanks, via Broad Pass, with a branch to the Matanuska coal fields. The conditions at the end of the working season of 1917 were as follows, from the seaboard northwards: The Alaskan Northern, bought by the government, was being rehabilitated from Seward to Knik Creek, 71 miles. Thence northwards work was progressing for 30 miles, blasting out a roadbed along the cliffs facing Turnagain Arm. From this point the road had been completed for 20 miles to Anchorage. This important town, with modern equipments and a population of 5000 or more, is the present base for railway construction. From Anchorage to Montana Creek (in the Susitna watershed) the main-line road was finished and in operation, a distance of 115 miles. From this section, at Matanuska Junction, a branch line of 38 miles terminates at Chickaloon in the Matanuska coal fields: this section was in operation, busy handling coal. Beyond Montana Creek clearing and grading, in various stages, was done as far as Indian Creek, mile 270. Thence through Broad Pass to the Nenana coal field, mile 360, only surveys had been made. Beyond the coal field to the town of Nenana (the base of construction in the interior), mile 414, grading of part and the completion of 10 miles of road had been effected. Thence to Happy Station, mile 460, there had been surveys only. At this point the junction was made with the Tanana Valley Railroad, bought by the government, a narrow-gauge road of 39 miles, which reached from Fairbanks the goldfield of the district at Chatinika, and also the town of Chena on the Tanana River. It seemed possible that the road might reach the Tanana Valley by the autumn of 1918, but it was reasonably certain that the entire system would be in operation by the summer of 1919.

SURVEYS. To include the fiscal year 1916-17 the U. S. Geological Survey made geological surveys covering 177,963 sq. mi., 30.2 per cent of the territorial area, divided as follows: exploratory, 73,200; reconnoissance, 99,535; detailed, 5232. Their topographical surveys aggregated 202,391 sq. mi., as follows: exploratory, 51,680; reconnoissance, 146,983; detailed, 3731, covering 34.6 per cent of Alaska. The U. S. Coast Survey continued its surveys of the waters of the territory, principally in the southeastern part. Many townsites in the regions adjacent to the U. S. railroad were surveyed by the General Land Office, and opened for settlers.

COAL. The progress of this industry has been disappointingly slow, and liberal modifications of the present national laws have been recommended as essential to its proper development. Against a few thousand tons of coal mined locally, there were imported into Alaska during the nine months ending with September, 1917, 45,996 tons of coal, largely from foreign mines. In the Matanuska district the United States had purchased one mine and was opening another, from which about 100 tons were furnished daily in the summer season, to the government railroad principally. Three leases only were made in the Matanuska district, covering 3440 acres. In the Bering River field private enterprise was developing the coal of patented lands, and was building a railroad to handle the output.

PETROLEUM. The Alaskan product is a high-grade refining oil with paraffin base. All wells are shallow and necessarily pumped, and their development is possible only through drilling. The restrictions placed on operators since the withdrawal of those lands in 1910 are such as to deter operation. See MINERAL PRODUCTION.

AGRICULTURE. The railway construction has been followed by the opening of many farms in the valley of the Susitna and adjacent regions. The economic advantages of agricultural industries had already been proved by farmers in the valleys of the Tanana and the lower Yukon, as well as in the Lynn Canal country. Difficulties and slowness of transportation to markets are the worst drawbacks to the farming interests. The potato yield of central Alaska during 1917 was sufficient to care for local needs, and to meet the demands of the northwestern sections of the Territory.

FORESTS. During the fiscal year 1916-17 the receipts from the products of the national forests of Tongass and Chugach amounted to $66,718, and the expenses of administration to $45,770. In these forests there were patented 41 homesteads, with others in preparation: 125 applications were received during the year. Occupancy permits to the number of 643 were in effect. Of lumber in 1916, 9,141,000 board feet measurement, and in 1917, 7,358,000 feet were produced.

TELEGRAPHS. Except in the Koyukuk Valley, practically every settlement of importance was connected with the outside world by telegraph, aërial, submarine, or wireless. The main cable between Seattle and Sitka being often interrupted by currents and rocky bottoms, its replacement was contemplated. Cable rates were again reduced and the night-letter system adopted.

AIDS TO NAVIGATION. The Lighthouse Bureau added during the year 1917 eleven lights, one fog-signal, twenty-three buoys, and seven beacons. See LIGHTHOUSES.

MAILS. The winter service from the coasts is strictly limited as to weight, and little beyond first-class matter is carried.

CONGRESSIONAL LEGISLATION. The following are the principal laws passed by Congress during the fiscal year 1916-17, regarding Alaskan affairs: Prohibiting on and after January 1, 1918, the manufacture, sale, gift, or other disposal of intoxicating liquors or alcohol; establishing the Mt. McKinley National Park; authorizing the legislature of Alaska to establish and maintain schools; and authorizing the issue of arms and military equipments to the home guard.

U. S. TAXES AND THE ALASKAN FUND. The amount collected by the Federal courts on account of taxes levied by the United States on licenses and business in the incorporated towns aggregated $175,000, an increase of $6000 over the previous year. In addition, Federal revenue of a considerable amount was collected from the national tax on the salmon industry. The territorial act passed during the session of 1917 also levied taxes on the fishery products; the legality of this was questioned.

The Alaska Fund for 1917 amounted to $259,-

370, an increase of $10,000 over that of 1916. This fund was utilized as follows: 65 per cent for the construction and maintenance of roads and trails outside of towns; 25 per cent for support of schools in districts outside of the incorporated towns; and 10 per cent for the care of indigents. The old settlers are cared for in the Pioneer Home at Sitka, and the indigent insane are provided for temporarily within Alaska and permanently in a sanitarium at Portland, Oregon. See MINERAL PRODUCTION.

ALBANIA. Nominally an independent principality, Albania was reduced to an anomalous condition in the great war, being overrun in one part or another by Austrian, Bulgarian, Italian, and Greek forces. The country comprises the former Turkish vilayets of Scutari and Janina and parts of Kossovo and Monastir. Its independence was proclaimed at Valona, November 28, 1912, and on December 20 the principle of Albanian autonomy was agreed to by the London Ambassadorial Conference. The Conference subsequently determined approximate frontiers and decided that the country should be administered by some European prince. On February 23, 1914, William of Wied, a German prince, accepted from an Albanian delegation the headship of the government, and on March 13, at Durazzo, formally became prince (mpret) of Albania. He had the support and advice of an International Commission of Control in accordance with an agreement of the Ambassadorial Conference. Turbulent conditions followed the outbreak of the great war, and in September, 1914, the prince and most of the members of the International Commission left the country. An unsuccessful attempt was made by Essad Pasha, in September and early October, 1914, to establish a republican government at Durazzo, and early in 1916 Prince William returned, but was unable to set up an orderly government.

The approximate frontiers of Albania embraced about 10,800 square miles. The estimated population, which is largely in the southern part was about 850,000, of which about 590,000 Mohammedan, 140,000 Greek Orthodox, and 120,000 Roman Catholic. The town of Scutari had an estimated population of 35,000; Elbasan, 13,000; Argyrocastron (now in Greek territory), 12,000; Tirana, 12,000; Berat, 8500; Koritsa, 8000; Valona, 6500; Durazzo, 5000. See EPIRUS.

HISTORY. After the fall of Montenegro, the Central Powers took over the whole of Albania with the exception of the southern portion below Valona. In March, Austria-Hungary declared the region a self-governing province under Austrian protection. On April 20, it was announced that the French had proclaimed the independence of Albania and had set up an authority in the region of Goritza in which half of the officers were natives. The southern portion, which had fallen into the hands of the Italians, was still held by them and on June 3 they declared it an autonomous province under Italian protection. Later (June 19) the Italian foreign office declared that Italy wished only to annex Valona and that the rest of the country could choose its own government under Italian protection. The Italian expeditionary force which had entered southern Albania under the command of General Piacentini widened its lines to the east till they touched the left wing of the Allied army in Macedonia, and to the south, where Janina was occupied against the protests of Greece. It was reported on July 19 that the Albanian leaders had requested Italy to demand for them at the Balkan conference Epirus and a part of Serbia.

ALBERTA. One of the Northwest, or Prairie, provinces of Canada. It lies east of British Columbia and west of Saskatchewan and is bounded on the south by the United States. The area is stated at 255,285 square miles, which is a very little larger than California and Oregon combined. The population continued to increase rapidly after 1911 (374,663), many persons being attracted by the extensive grain-growing lands. Census of June 1, 1916, shows total population of 496,525 (277,256 males, 219,269 females). The city of Calgary had in 1916, 56,514 inhabitants; Edmonton, the capital, 53,846.

The province has a legislative assembly of one chamber; it consists of fifty-six members elected by direct vote for five years. The executive authority rests with a lieutenant governor, appointed by the governor-general of the Dominion; he acts through an executive council, or responsible ministry, of eight members. Lieutenant governor in 1917, Robert George Brett; premier, A. L. Sifton. See CANADA.

ALCOHOL. See LIQUORS.

ALFALFA. The hay produced from this crop in the United States constituted from 15 to 20 per cent of the total hay production. The area devoted to alfalfa continued to increase during the past year and was regarded as consisting of over 6,000,000 acres. Special stress was laid in many States on the increase of the alfalfa acreage in the effort to produce greater supplies of food and feeding stuffs to meet the demands of the war emergency. While the culture of the crop was rapidly increasing and had spread to all parts of the country, 75 per cent of the yield was produced in the north central States west of the Mississippi River and the Rocky Mountain and far western States. The leading alfalfa states in decreasing order of production were Nebraska, Kansas, California, and Colorado. Nebraska and Kansas produced about 25 per cent of the country's yield, and the four States together about 40 per cent. Alfalfa appears as preëminently the great forage and hay crop of the semiarid sections of the country, where it is grown with and without irrigation.

The average prices for alfalfa seed in 1917 were from 30 to 40 cents higher per bushel than in 1916. The average price as sold by producers was $9.04 and as bought by them $11. The seed crop of Kansas, one of the principal seed-producing States, was only about 50 per cent of the yield in 1916 and was also lower in quality, the shrinkage which is normally about 10 per cent being 20 to 25 per cent. During the year ending June 30, 1917, the imports of alfalfa seed amounted to 3,169,600 pounds, as compared with 3,251,796 pounds the year before. The average farm value of alfalfa hay on October 15, 1917, was $17.59, while on October 15, 1916, it was only $10.25 per ton.

The agricultural experiment stations continued to study and add to our knowledge of handling and using the crop. In testing alfalfa as an orchard crop the Oregon Experiment Station found that when the soil is properly irrigated and sufficient moisture maintained in it, the trees will improve in vigor by growing alfalfa or clover in the orchard. The station also found that as the sulphur requirements of the plant are comparatively high, its response to calcium sulphate, or land plaster, and flowers of sulphur used as fertilizers was very satisfactory. The Nebraska Station demonstrated that alfalfa is the best forage crop for the sandhill regions. The Province of Ontario, Canada, reported an area of 189,109 acres in alfalfa in 1917, or an increase of about 12,000 acres over 1916.

ALGARROTIN. See CHEMISTRY, INDUTRIAL.

ALGERIA. One of the Barbary States of northern Africa; a French province, administered by a governor-general assisted by a consultative council. The country is divided into the three departments of Oran, Constantine, and Algiers, with capital cities of the same names, each sending one senator and two deputies to the National Assembly.

Area by departments, European and native population (1911 census), and total density per square kilometre, are shown below:

Department	*Sq. kms.*	*Europeans*	*Natives*	*D.*
Algiers	54,540	271,767	1,421,819	31
Constantine	87,302	155,654	1,945,443	24
Oran	65,897	319,089	892,212	19
Algeria proper	207,739	746,510	4,740,526	24
Southern Territories	367,550	5,533	481,052	1
Total	575,289 *	752,043	4,740,526	10

* 222,119 square miles.

The products of the country include esparto and halfa grass, barley, wine, oil, tobacco, wool, iron, and zinc ores, etc. Workable beds of phosphates have been discovered in the region between Oran and Tunis. The exports consist mainly of wine, wheat and other cereals, sheep and oxen, skins, fruits, zinc and iron ores, olive oil, phosphates, cork wood, esparto grass, manufactured tobacco, and vegetables. The French forces maintained in Algeria consist of an army corps numbering 54,600 men, and the expenditure for military and naval purposes is borne by France.

In the table below will be found the area devoted to principal cereal crops for two years, with the total yield, and the average yield per hectare in 1916 (1917 figures are provisional):

	Hectares		*Quintals*		*Qs.*
	1917	*1916*	*1917*	*1916*	*ha.*
Wheat	1,303,821	1,324.328	8,087,000	7,933,785	6.0
Barley	1,148,794	1,217,798	7,230,000	7,831,498	6.4
Oats	275,942	216,762	2,750,000	1,907,339	4.5
Vines	148,956	177,475	......	8,781,266 *	..

* Hectoliters.

From the department of Oran came the report that the 1917 harvest was rendered difficult by extensive lodging of wheat and barley; complaint was made of a shortage of labor and coal, and threshing was delayed and prolonged.

COMMERCE. The table below shows the imports for consumption and exports of domestic produce in thousands of francs:

	1908	*1909*	*1910*	*1915*	*1916*
Imports	449,300	462,000	512,000	472,844	538,680
Exports	319,200	359,200	518,000	512,808	538,680

The leading imports for consumption and exports of domestic produce are shown below for 1916, values in thousands of francs:

Imports	*1916*	*Exports*	*1916*
Cottons	89,168	Sheep	32,047
Woolens	2,184	Hides & skins	9,158
Clothing and linen	20,708	Wool	11,395
Skins and mfrs.	19,695	Wheat	23,689
Machinery and parts	11,743	Oats	24,816
Other metal work	10,276	Barley	34,117
Furniture and woodwork	17,440	Olive oil	11,071
Toys, brushes, etc.	6,307	Cork	6,659
Paper, etc.	22,751	Wine	259,584
Coal	19,548	Phosphates	9,505
Sugar	21,874	Iron ore	13,330
Vegetable oils	5,635	Zinc ore	7,244
Iron & steel	7,094	Fruit	17,383
Coffee	14,387	Tobacco, etc.	22,279

FINANCE, ETC. The following table gives details of the 1916 budget:

Revenue	*Francs*
Taxes (direct)	18,775,046
Taxes (indirect)	59,676,195
State domains	10,198,645
Monopolies, etc.	10,496,319
Various	6,253,198
Receipts *d'ordre*	26,079,849
Extraordinary	2,697,283
Special revenue	1,226,000
Total	130,402,535
Southern Territories	5,180,992
Expenditure	*Francs*
Administration debt	34,519,685
Interior	29,780,107
Native affairs	6,495,337
Finance	11,616,371
Posts and Telegraphs	14,944,867
Public Works	21,489,099
Agriculture, etc.	4,004,104
Various	4,891,893
Extraordinary	2,697,283
Total	130,388,836
Southern Territories	5,035,996

A governor-general administers the country, assisted by a consultative council. Legislative power rests with the French chambers; each department sends a senator and two deputies to the National Assembly.

ALLEGHENY COLLEGE. Situated at Meadville, Pa. Students in the fall of 1917 numbered 352 and there were 26 members of the faculty. Volumes in library, 44,000. Productive funds, $1,025,595, with total income of $174,791. Founded in 1815. Non-sectarian in policy but under Methodist Episcopal control. Co-educational. President, William Henry Crawford, D.D., LL.D.

ALLEN, JOHN. An American legislator, long widely known as "Private" John Allen, died at Tupelo, Miss., October 30, 1917. He was born in Tishomingo County, Miss., July 8, 1846, received a public school education and at the outbreak of the Civil War enlisted in the Confederate Army. After the war he studied law, was admitted to the bar in 1870, was district attorney of the First Judicial District of Mississippi in 1876-80, and in 1885-1901 represented the First Mississippi District in Congress. Allen gained his name of "Private" from the fact that early in his career in Congress he announced that in view of the prodigious number of generals, colonels, and majors who survived the Civil War, he aspired to the distinction of being known as a private soldier. He was noted for his witty, incisive speeches.

ALLENBY, Sir EDMUND HENRY HYNMAN. A British soldier, distinguished as a commander on the Western Front and for his campaign in Palestine, resulting in the capture of Jerusalem. He was born April 23, 1861, was educated at Haileyburg and soon afterward joined the Inniskilling Dragoons, serving with that regiment in the Bechuanaland Expedition, 1884-85. He was afterward with the British force in Zululand, 1888; was adjutant of the Inniskilling Dragoons, 1889-93; took part in the South African War with distinction; commanded the Fifth Royal Irish Lancers, 1902-05, and the Fourth Cavalry Brigade, 1905-10. After the opening of the European War Allenby showed marked efficiency both as division and corp commander and later as commander of the British Third Army, his skill contributing largely to the great victories of the Somme and the Aisne. In June, 1917, he was sent to take command of the expedition in Palestine, succeeding General Murray. He steadily advanced until the Turks were compelled to retreat on Hebron and Jerusalem, the latter city surrendering on December 10. Allenby, at the head of the British forces and allied contingents and military representatives, entered the Holy City quietly on December 11. In 1916 he was made lieutenant general. See WAR OF THE NATIONS.

ALLIANCE FRANÇAISE, FÉDÉRATION DE L'. An association of societies in the United States and Canada, incorporated in 1902. It aims to promote the study of the French language, literature, arts, and history. A council which meets five times a year and which is composed of twenty directors, supervises the affairs of the Federation. A circulating library is maintained. The honorary president of the Federation is M. Jusserand, French ambassador at Washington. The president of the administrative council is M. J. LeRoy White, and the general secretary is Dr. Louis Delamarre. There are 185 groups or circles in different cities of the United States and Canada and delegates are sent to an annual convention, the last convention having been held in New York in April, 1917.

ALSACE-LORRAINE. The Imperial territory, or Reichsland, of Germany, which was taken from France in 1871, and for whose recovery she contends in the present war. The territory consists of Lorraine and Upper and Lower Alsace. The territory is bounded on the north by Luxemburg, the Rhine Province of Prussia, and the Palatinate (Rhenish Bavaria); the eastern boundary, which is wholly Alsatian, is marked by the Rhine River, separating the territory from Baden; at the south, Upper Alsace touches Switzerland; on the west is France. The area of the territory is 14,522 square kilometres (5607 square miles), or nearly the area of Connecticut and Rhode Island. The population increased from 1,549,738 (106.8 per sq. km.) in 1871 to 1,874,014 (129.0 per sq. km.) in 1910. Below are shown the area by districts and the population according to the census of December 1, 1910:

		Population		
	Sq. km.	*Male*	*Female*	*Total*
Lorraine	6,228	356,026	299,185	655,911
Lower Alsace .	4,786	352,644	348,294	700,938
Upper Alsace ..	3,508	256,955	260,910	517,865
Total	14,522	965,625	908,389	1,874,014

The 1910 census returned the German-speaking population at 1,624,260; French-speaking, 204,262. German is the language of the schools, and hence large numbers of the people who favor reunion with France are unlearned in the language of that country. In 1910 Roman Catholics numbered 1,428,343 (76.22 per cent); Evangelical, 408,274 (21.78 per cent); other Christians, 3868 (0.21 per cent); Jews, 30,483 (1.63 per cent). The population residing in communes of 2000 and upwards in 1910 was 996,149 (53.16 per cent); in rural communes, 877,865 (46.84 per cent). The larger communal populations in 1910 were as follows (in some cases the figures include the population of areas subsequently annexed): Strassburg, in Alsace, capital of Alsace-Lorraine, 178,891; Mülhausen, in Alsace, 105,488; Metz, in Lorraine, 79,318; Colmar, in Alsace, 43,808; Haguenau, in Alsace, 18,868; Saargemünde, in Lorraine, 15,384; Diedenhofen (Thionville), in Lorraine, 14,184. In 1913 marriages numbered 13,170 (rate per thousand inhabitants, 6.9); total births, 45,614 (23.9); living births, 44,341 (23.3); deaths, including stillbirths, 30,501 (15.8); excess of births over deaths, 15,113 (7.9). Stillbirths numbered 1273 (2.8 per cent); illegitimate births, 3409 (7.5 per cent).

For principal crops the figures below show the area in hectares and the yield in metric quintals in 1914, and the average yield per hectare in the period 1904-13 and the year 1914:

	1914		*Average*	
	Hectares	*Quintals*	*1904-13*	*1914*
Wheat	134,925	1,823,330	15.5	18.5
Rye	56,196	772,370	15.9	13.8
Barley	47,492	883,670	19.3	18.6
Oats	112,405	1,911,980	15.9	17.0
Potatoes	92,211	8,731,510	114.6	94.7
Hay	197,481	11,559,050	49.0	58.5

Alsace-Lorraine is administered, under the sovereignty of the Emperor, by a governor (Statthalter) whom the Emperor appoints and may recall. Under the constitution of May 31, 1911, the legislative power is vested in the Emperor and a diet of two chambers. The first chamber consists of representatives of the religious bodies, of the four larger cities, of chambers of commerce, etc., and of members nominated by the Emperor, all holding office for five years. Members of the second chamber, 60 in number, are elected by direct vote for five years.

In November, 1917, the ex-mayor of Colmar (Alsace), who had escaped to the United States, scouted the idea of a plebiscite as being a fair means of determining the future status of Alsace-Lorraine. At an election under German supervision a vote would be only another "scrap of paper." "Alsace," the ex-mayor said, "is French to the heart to-day, and since 1871 she has never forgotten her loyalty to the free republic to which her soul belongs. German editors write editorials full of learning to show that the children of Alsace-Lorraine to-day are different from yesterday, because they speak the language which Berlin has forced upon them. . . . Do you know how many Alsace-Lorrainers deserted from the German Army when war broke out and are now fighting with France? Thirty thousand. . . . German papers will tell you that because we speak the language that has been forced down our throats we are content. That is the thinking of Prussia. But can the Prussian tell us why, while we were a part of France, we never spoke bitterly of the government? Why under . . . German rule we have protested by our representatives at the Reichstag? Why our young men have emigrated to escape military duty, while our citizens innumerable have gone to imprisonment for expressing their affection for France? Despite the mills of industrious Kultur, which strive forever to pour everything into a hideous German mold, Alsace-Lorraine is to-day overwhelmingly French. . . . Our population is 1,900,000 all together. Of those 1,500,000 are natives, almost without exception totally French. . . . Since the beginning of the present war the German Generals have made no hesitation about declaring that they consider Alsace-Lorraine an enemy country. How much better than Belgians have we been in the sight of Prussia? Look at the thousands of Alsace-Lorrainers who have been deported to slavery and answer for yourself. . . . The prisons are full of my people who were arrested during those first awful days of the war. When they are candid—which happens seldom—the Germans admit that they have no faith in the loyalty of Alsace-Lorraine. . . . The martial courts have sought to silence us with frightful grimaces. We have spoken our love for France at the cost of our lives. Executions have been many, and thousands of years of imprisonment have been ordered by their councils of war." See FRANCE, *History;* GERMANY, *History;* WAR OF THE NATIONS.

ALUMINUM. See CHEMISTRY, INDUSTRIAL.

AMERICAN ASSOCIATIONS AND SOCIETIES. For organizations of which the official titles begin with the word American, see under the specifically descriptive word in that title.

AMERICAN INTERNATIONAL CORPORATION. This corporation was formed in November, 1915, by prominent bankers and financiers, especially those connected with the National City Bank of New York, for the purpose of developing American trade and industrial interests abroad. Its charter enables it to carry on every kind of trade, manufacturing, construction, or financial activity through the numerous branches of the National City Bank and the agencies of American corporations doing business abroad. The corporation has undertaken developmental activities in various European countries throughout South and Central America, China and Japan, and in various parts of the United States. In September it organized the American International Steel Corporation to act as agent for the sale of American steel products abroad, with offices and salesmen in Europe, Asia, South America, and Africa. While the war-time business in steel and iron goods for export was small owing to the precedence of government business, this organization was expected to play an important part in the after-war development of American trade.

The corporation also entered into a contract with the United States government to construct an extensive shipyard on Hog Island in the Delaware River, and to build 50 steel merchant ships of 7500 tons each. The government received the privilege of increasing the order to 200 ships. To handle this business a subsidiary called the American International Shipbuilding Corporation was formed. Still another subsidiary, the New York Shipbuilding Corporation, also handling large government contracts, had extensive works at Camden, N. J. The above contract provided that after a fixed percentage of profit had been subtracted all additional profits should be divided equally between the government, the working force, and the contracting corporation.

Another expansion was the acquisition in November of G. Amsinck and Company of New York, commission traders, founded in 1856, and operating mainly in Latin America. About the same time the National City Bank opened its tenth foreign branch at Caracas, Venezuela, this being the eighth branch in South America.

AMERICAN UNIVERSITY UNION IN EUROPE. An association of American universities and colleges organized to meet the needs of their students and graduates in Europe for military or other service in the Great War in the cause of the Allies. Headquarters in Paris are at the Royal Palace Hotel on the Place du Théâtre Français and the Hotel Montana. Headquarters in London are at 16 Pall Mall East, S. W., 1, near Cockspur Street and Haymarket. The Union provides a home with the privileges of a simple club, such as information bureau, writing and newspaper room, bedrooms, baths, social features, opportunities for physical recreation, entertainments, medical advice, etc. The institutions coöperating with the Union are privileged to conduct separate bureaus in headquarters for the interest of the respective member institutions.

At the end of 1917 the following colleges and universities were members: Allegheny, Amherst, Beloit, Boston, Bowdoin, Brooklyn Polytechnic Institute, Brown, California, Carleton, Carnegie Institute of Technology, Catholic University of America, Chicago, Cincinnati, Clark University, Colby, Colgate, Colorado, Colorado State Teachers' College, Columbia, Cornell, Dartmouth, Delaware, Denison, George Peabody College for Teachers, Georgetown, George Washington, Georgia, Grinnell, Harvard, Haverford, Hobart, Holy Cross, Idaho, Illinois, Indiana, Iowa State University, Johns Hopkins, Kentucky, Knox, Lafayette, Lehigh, Leland Stanford, Louisiana, Maine, Massachusetts Institute of Technology, Michigan, Michigan Agricultural College, Minnesota, Michigan College of Mines, Missouri.

AMHERST COLLEGE. Situated at Amherst, Mass. Students in the fall of 1917 numbered 368, and there were 56 members of the faculty. Volumes in library, 115,000. Productive funs, $3,000,000; income, $150,-

000. Dr. Albert Parker Fitch, former president of Hudson Theological Seminary, is now professor of history of religion and biblical literature. Founded in 1831. Non-sectarian. President, Alexander Meiklejohn, Ph.D., LL.D.

AMMONIUM SULPHATE. See Fertilizers.

AMMUNITION. See Military Progress.

AMUNDSEN EXPEDITION. See Polar Research.

ANALYTICAL CHEMISTRY. See Chemistry, General Progress of.

ANDERSON, Winslow. An American surgeon and medical educator and editor, died in New York City May 7, 1917. He was born in 1861. After graduating M.D. from the University of California in 1884, he spent some years in London, where he became a member of the Royal College of Physicians and the Royal College of Surgeons. From 1896 to 1911, when he retired as emeritus professor, he held the chair of gynæcology and abdominal surgery in the College of Physicians and Surgeons, San Francisco. Dr. Anderson became surgeon to several hospitals, was for some years a member of the California State Board of Health and the Board of Medical Examiners, and surgeon general of the National Guard. From 1890 he edited the *Pacific Medical Journal*. He wrote *Mineral Springs and Health Resorts of California*, and articles on diseases of the lungs in *The Twentieth Century Practice of Medicine*. He served as a president of the American Medical Editors' Association, and was identified with many societies, American and foreign.

ANDREWS, Elisha Benjamin. An American educator, died at Interlaken, Fla., October 30, 1917. He was born at Hinsdale, N. H., January 10, 1844, and was educated at the public schools and privately. At the outbreak of the Civil War he enlisted and served in Connecticut regiments during the war. Graduating at Brown University in 1870 and at the Newton Theological Institution four years later, he preached for a year and afterward was president of Denison University in 1875-79. He was professor of homiletics at Newton Theological Institution, 1879-82; professor of history and political economy in Brown University, 1882-88; professor of political economy and finance in Cornell University, 1888-89; and president of Brown University, 1889-98. Because the trustees of that university criticized his advocacy of free silver he resigned in 1897 but soon withdrew his resignation. In 1898-1900 he was superintendent of schools at Chicago, and then was appointed chancellor of the University of Nebraska. He was United States commissioner to the Brussels monetary conference in 1892, where he vigorously advocated international bimetallism. He was elected a member of the corporation of Brown University in 1900 and in 1904 became president of the Association of State Universities. Dr. Andrews retired from the University of Nebraska as chancellor emeritus January 1, 1909. In 1907 he received a pension from the Carnegie Foundation. Besides a number of college text books on history and economics he published: *An Honest Dollar* (1889; 3rd ed., 1894); *Wealth and Moral Law* (1894); *History of the United States* (2 vols., 1894); and *The History of the Last Quarter Century in the United States, 1870-95* (1896), revised under the title *The United States in Our Own Time* (1903).

ANGLICAN CHURCH. See England, Church of.

ANGOLA. A West African Portuguese colony, with an estimated area of about 490,000 square miles, and a population estimated at 4,200,000. St. Paul de Loanda is the capital. Tropical agricultural products are exported, but the rubber supply is failing. The trade is mainly with Portugal. In 1914 the imports were valued at 5,214,467, and the exports at 4,347,237 escudos (exclusive of Congo). Revenue and expenditure for 1916-17 balanced at 6,835,288 escudos. Total length of railway lines open for traffic in 1916, 818 miles. The colony is administered by a governor-general.

ANNAM. A French protectorate on the China Sea; a part of the dependency of French Indo-China (q.v.). Hué is the capital, with 65,000 inhabitants, and Bin-Dinh the largest town (75,000). The trade is included with that of French Indo-China. Raw silk, cattle, and agricultural and forest products are exported. There are valuable mineral deposits, but mining is not well developed. The native king (Khai-Dinh, who succeeded Duy-Tan in 1916) is the nominal head of the government. Internal affairs are actually administered by the French residents.

ANORTHOSITE. See Geology.

ANTARCTIC EXPEDITIONS. See Polar Research.

ANTHRAX. An apparently effectual and simple cure for anthrax (malignant pustule) in human beings was announced by R. Kraus, head of the bacteriologic institute of the national department of health of Argentina. Anthrax had flourished in that country of late years, owing to its cattle and hide industries, and had caused more severe suffering there than in any other country in the world. Statistics showed that there had been a notable increase in the number of cases occurring in the United States recently, so that the disease was coming to be recognized as an important occupational malady. While anthrax was not nearly so fatal as was generally believed, the mortality ranged from 13 to 24 per cent. Kraus's treatment consisted in the injection, intravenously, subcutaneously, or intramuscularly, of normal beef serum. The fifty cases treated in this manner and reported by Penna and Krause, all recovered promptly. The dose was 20 to 30 c.c. or even larger, the serum being heated twice for half-hour periods to 56 degrees C. before being injected. Later reports covered ninety cases with only one death. The problem of eradicating anthrax from the United States was only to be solved by careful inspection and disinfection of hides, wool, and other animal products shipped from localities known to be infected with anthrax spores, which are peculiarly resistant to drying, and maintain their infective potency for long periods. Until more stringent methods were adopted it seemed likely that the number of cases of malignant pustule in the United States would continue to show a steady increase.

ANTHROPOLOGY. Contrary to what might have been expected, the anthropological harvest of 1917 has been an unusually productive one, at least in America. The editors of the *American Anthropological Association*, by throwing open the pages of their quarterly journal and memoirs to foreign scholars, have also done something to provide European writers with an opportunity to publish during the war and are thus promoting the interests of international scientific coöperation. The launching of two promising new serial publications, the *International Journal of American Linguistics* and the *Harvard African Studies* (see *Africa* below) is likewise a noteworthy phenomenon.

THEORETICAL ETHNOLOGY. An attempt to summarize the present ethnological viewpoint as regards the relations of ethnology to psychology, racial characteristics, and geographical environment is made by Lowie in his *Culture and Ethnology.* The general position of this work coincides roughly with that emphatically voiced by Kroeber in his paper on "The Superorganic" (*American Anthropologist*, 1917, pp. 163-213), the contention of both writers being that the domain of culture constitutes a distinct sphere of investigation, from which follows the complete autonomy of ethnology and the necessity of interpreting the data of civilization through other facts of a cultural character rather than by merging them in data of a supposedly more general nature. This is likewise the view taken by Rivers in his "Sociology and Psychology" (*The Sociological Review*, vol. IX), where the author shows that psychology is rather in need of ethnological aid than vice versa.

The passage at arms between Professor Elliot Smith and several American ethnologists as to the derivation of American civilizations from an external source has been followed by a lull. On the other hand, the problems of social organization and kinship maintain their reputation for perennial attractiveness. In his "California Kinship Systems" (*Univ. of Cal. Pub.*, vol. XII, No. 9) Kroeber once more defines his opinions on the place of ethnology in a scheme of the sciences and defines his position on the development of kinship nomenclature. Ethnology, he contends, does not seek to establish causal relations but merely to describe cultural phenomena. With regard to relationship terms in particular, it is "the infinitely variable play of the variable factors" that precludes the determination of regular causal connections. While sociological causes have certainly been at work, as Kroeber now explicitly admits, there are more potent influences of the "psychological" order, such as operate in the extension and application of other elements of human speech. Accordingly it is not admissible to argue from an observed feature of terminology to a sociological cause. In other words, stages of human society cannot be reconstructed from the kinship nomenclature after the manner of Lewis H. Morgan and W. H. R. Rivers. From a different angle the same subject is dealt with in Lowie's paper on "Historical and Sociological Interpretations of Kinship Terminologies" (*Holmes Anniversary Volume*, pp. 293-300). Lowie points out that the distribution of kinship features is such as to be in large measure intelligible only through borrowing. In other words, often the features cannot be the result of a direct reflection of existing social conditions but occur in a definite tribe because of its geographical position and historical relations. Sociological causes may be involved where similar phenomena of nomenclature appear in historically unconnected regions. In a chapter of his *Culture and Ethnology* this author likewise emphasizes the importance of the distributional aspect of the kinship problem. He further insists that the kinship terminology of a people cannot be regarded as a system but as a congeries of often disparate principles of classification welded together by historical rather than logical causes. In a memoir on *Matrilineal Kinship, and the Question of its Priority* E. S. Hartland boldly throws down the gauntlet to American ethnologists in general and Swanton and Lowie in particular, for challenging the greater antiquity of maternal descent and once more breaks a lance for the classical theory, citing mainly African, American, and Australian data on behalf of his thesis. With regard to the New World Hartland repudiates the argument commonly advanced by American scholars, viz., the higher cultural stage of the matrilineally as compared with patrilineally organized tribes, on the ground that a people may progress in the material arts and industries while preserving a primitive social polity. He contends further that where no traces of totemic culture with exogamy and mother-right are now discernible in America, this is merely due to the combined disturbing influences of aboriginal wars and migrations, missionary teaching, and governmental interference. As to the possibility of a loose organization among primitive peoples, Hartland insists that while a few savage peoples, such as the Eskimo and Andamanese, trace their descent through both parents, the preponderating majority of savage peoples limit kinship to one or the other side of the family and that this unilateral scheme must be regarded as normal. Great weight is attached to the exceptional position of the maternal uncle in some patrilineal tribes, this being uniformly interpreted as a relic of an earlier matrilineal condition. For Australia Hartland argues that an early dual organization was followed by a subdivision into four matrimonial classes; and he concludes that the patrilineal system with eight classes found in Central Australia represents a still later stage of social evolution.

Hartland's reopening of a question almost considered closed by Americanists is sure to precipitate a lively controversy. It is worth noting that a fellow-Briton, W. H. R. Rivers, so far from sharing Hartland's views rejects the argument in its generality, partly on the basis of the empirical evidence adduced from the New World, partly on account of the important changes wrought in social organization by the contact of different populations (article "Mother-right" in Hastings's *Encyclopædia of Religion and Ethics*).

A contribution of the greatest significance for the general problem of animal domestication from an ethnological point of view has been made by Laufer in his memoir on *The Reindeer and its Domestication.* Compared with other animals the reindeer is the most recent to be domesticated. There is no record of its use by man except as game in the classical writers, and the earliest mention of its domestication is to be found in a Chinese source going back to 499 A.D., at which time it is clear that the animal was both milked and employed for draught. Allowing for the gradual process of taming, its initial stages may safely be traced to the beginnings of the Christian era. The Chinese reference antedates by centuries the earliest Western account, derived from the narrative of a Norse traveler to northeastern Europe, whose story at best suggests the very first stage of domestication. Mention of fully domesticated reindeer do not appear in Europe earlier than the fifteenth century; the negative evidence of the *Kalevala*, the great Finnish epic, is especially noteworthy. It is thus clear that the starting-point of reindeer culture must be looked for on Asiatic soil, while the great uniformity in relevant customs, such as castration by biting, property-marketing, milking, and lassoing, clearly demonstrates a single origin.

In determining this centre of distribution Laufer rules out tribes like the Chukchi, whose herds are still in a half-wild condition, and others like the Yakut, among whom reindeer play a wholly secondary part. Since the entire reindeer culture is patterned on the domestication of other species tamed at an earlier date, its evolution must be traced to some area where reindeer are found under domestication with such other animals as horses and cattle. These conditions are satisfied in the vicinity of Lake Baikal,—precisely the region to which the oldest Chinese records refer. Of the present populations inhabiting this region the Buryat are out of the question as reindeer tamers because no member of the Mongolic stock ever had reindeer. The Tungus are known to be newcomers in Siberia and historical annals show their ignorance of reindeer prior to their immigration. There remains the new Turkicized remnants of originally Samoyed peoples living in the Sayan mountains and the upper reaches of the Yenisei. Of these the Soyet, some of whose gentile names still coincide with those of the Samoyed, are especially noteworthy as occupying approximately the old home of the Samoyedic stock. With them the domestication of reindeer has advanced further than among any other Asiatic people while it is certain that the reindeer vocabulary of the Samoyed is remarkably well developed. From this Laufer concludes that the Samoyed while dwelling in the Lake Baikal territory, domesticated the reindeer, transmitting their novel acquisition eastward to the Tungusians, whence in turn it was communicated to the Yakut, Chukchi and Koryak, while in the opposite direction it traveled to the Ugrians of the Ural and the Lapps. As to the process of domestication Laufer points out that single specimens of Cervidae have been tamed in various parts of the world and proved extremely adaptable and that domesticated individuals are commonly employed by primitive men to decoy wild members of their species. It remains an open question whether the practice of riding on reindeer was evolved by the Tungus or by the Southern Samoyed, of whom the Soyot still employ these animals as mounts.

ASIA. Weighty conclusions bearing on the general history of culture are embodied in B. Laufer's *The Beginnings of Porcelain in China*. Taking for his starting-point certain specimens of earthenware agreeing closely with mortuary Han pottery but differing by virtue of their "porcelanous" glaze, he had fragments subjected to a chemical analysis. This established the identity in chemical composition of this ware with good porcelain, the difference being thus reduced to a purely physical one: the porosity of the Han pieces owing to the use of too coarsely ground material. This indicates that we have here the initial stage in the evolution of genuine porcelain, which developed by gradual improvements until true white porcelain resulted some time in the seventh century of our era. The use of glaze was undoubtedly derived from western Asia during the reign of the Han dynasty, and the particular form of porcelanous pottery evolved about the close of the third century is the first creative use of the foreign idea by the Chinese artisans, the later steps being purely indigenous. Though some scholars have connected the murrine vessels of classical writers with Chinese porcelain, they antedate porcelain by centuries and must be conceived as highly-glazed pieces of Iranian or Egyptian provenance. Important ethnological results are reached by Dr. Laufer respecting the character and correlations of the potter's wheel. This device is restricted to the Old World, and there again to ancient Egypt, the Mediterranean and West Asiatic civilizations, Iran, India, China, and the Chinese culture province. In other words, it belongs to the higher levels of civilization, where it is found in association with the use of the plow and ox, and is uniformly used by the male sex, while hand-made pottery throughout the world is almost uniformly a feminine industry. Technologically, it is simply a cart-wheel applied to the ceramic art. The development of pottery is thus unilinear from hand-made to wheel-turned earthenware but involves the grafting of a revolutionary principle upon a process of hoary antiquity; the discrete stages corresponding to a sociological division of labor between the sexes.

A remarkably detailed account of religious thought and observance among the more primitive inhabitants of the Philippine archipelago is offered by Laura W. Benedict in "A Study of Bagobo Ceremonial, Magic, and Myth" (*Annals of the New York Academy of Sciences*, vol. XXV, pp. 1-308). The Bagobo, who live in southeastern Mindanao, have preserved their aboriginal beliefs almost uncontaminated by Mohammedan doctrines. Their pantheon includes deities of exalted rank living in nine heavens from whom neither injury nor succor is expected and who are accordingly not propitiated in any way, their place being in primitive cosmology and literature rather than religion. The assumption is that they are foreign importations. Other gods are intimately connected with human interests and functions as war-gods, nature spirits, and patrons of particular industries. However, even these do not occupy the chief place in aboriginal ritualism, which is reserved for the *buso*, demons preying upon human flesh and causing diseases and innumerable misfortunes. These spirits are consequently prayed to and receive offerings of betel. They have their altars like the benevolent gods but every act of devotion to a *buso* has a purely prophylactic purpose. Every human being is supposed to have an evil soul on the left side, which turns into a *buso* at death, while the right-hand soul is good and departs for a great subterranean country to continue an indefinite existence similar to its earthly career. Among the Bagobo there is no esoteric priesthood, the chief acting as the ecclesiastical headman for his group. However, there are a number of recognized functionaries, such as braves who have honorable slayings to their credit and are permitted to recite their exploits in public; mediums possessed by spirits; and priest-doctors who cure disease or conduct the séances, drawing replies from the mediums, who are usually of the female sex. In general there is no tendency to exclude women from ritualistic activity. The ceremonies are marked by sacrifices of human victims or fowls, the drinking of sacred liquor, formal purification rites, magical performances to guard against ghosts, chants, and dancing.

The most important results of Miss Benedict's researches lie in her comparative conclusions. Not only are there far-reaching resemblances between the Bagobo and other Mindanao tribes in point of ceremonial procedure, but early Spanish records demonstrate many close similarities with the primitive ancestors of the now civilized Tagal and Visayan of other islands. This suggests the probability of a common origin. Other parallels occur in Malacca and various of the East Indian islands, especially in Borneo. But in addition to the Malay basis of Bagobo religion there is very clear evidence of an Indo-Iranian influence in ceremonial technique and still more in mythological conceptions. Thus it appears that the aboriginal stock of myth and ritual was augmented by the infiltration of Hindu elements. Chinese influence was slight and Islam merely introduced some minor magical usages and mythical episodes.

Miss M. A. Czaplicka's *My Year in Siberia*, while only a preliminary account of travels to be more technically described in a later report, furnishes welcome ethnographic data concerning the little-known and isolated Yeniseians sometimes referred to as Ostyak of the Yenisei, though altogether unrelated to the Ostyak proper.

Oceania. By far the most intensive study of the social life of any Papuan group as yet published is Dr. Richard Thurnwald's monograph on "Bânaro Society" (*Memoirs of the American Anthropoligal Association*, vol. III, pt. IV). The Bânaro inhabit four villages on the Keram, a tributary of the Augusta River in northern New Guinea. In every village there are several locally segregated gentes, each subdivided into halves or "sibs." This bifurcation is objectively represented by a corresponding division of the "goblin-hall" which forms the religious centre of every gens. While the patrilineal gens is exogamous, the sib forms the economic unit inasmuch as it owns hunting territories and plantations and has a claim on its members' working power. A unique series of customs is associated with marriage. One basic principle is that two families exchange their daughters, each being espoused by the brother of the equivalent girl. Owing to the intimate relation of the two sibs in a gens, the complementary sibs must participate in the arrangement, which leads to four marriages at the same time. No bridegroom, however, is permitted to have access to his bride, but must turn her over to his father. This elder, instead of exercising marital rights, merely takes her to the goblin-hall, whither he summons a special friend from his own age-group and of the complementary sib; and it is this sib-friend who impersonates the goblin and in this rôle consummates the union. The young husband is not allowed to touch his wife until she has given birth to a child, whose father is supposed to be the goblin. On several subsequent occasions the "goblin-father" reasserts his connubial prerogatives, which he only relinquishes to his son at a later period, whereby an age-mate of the husband comes to share his marital rights. Through this intricate scheme every woman is normally mated by three men,—her father-in-law's age-mate of the complementary sib; her husband; and her husband's age-mate.

Thurnwald connects this peculiarly intricate matrimonial system on the one hand with the exchange of sisters in vogue among numerous Oceanian groups, on the other with the governmental principle by which the elders in the community arrogate to themselves various privileges. Further, describing in detail the kinship terminology of the Bânaro and its relations to other systems, he arrives at the conclusion, independently reached by Rivers, Sternberg, and Lowie, that the Hawaiian type of nomenclature is not earlier than the Turanian as Morgan assumed but represents a later reduction from a more involved type.

Africa. The first issue of the *Harvard African Studies* under the editorship of Oric Bates and F. H. Sterns bodes well for the prosecution of Africanist researches in this country. The volume published is a miscellany of papers on archæological, linguistic, ethnographic, and somatological topics. The longest contribution, by Bates, is devoted to an intensive investigation of the methods and apparatus for fishing employed by the ancient Egyptians. An archæological discussion by Sterns deprecates the premature identification of African with European artifacts.

The *Journal of American Folk Lore* (vol. XXX, no. 2) devoted one of its quarterly issues largely to African and negro material. Among the contributions made are a series of "Bantu Tales" collected by Rev. R. H. Nassau and numerous negro folk-tales garnered by Mrs. Elsie Clews Parsons in different parts of North America. A unique addition to ethnological literature is Solomon T. Plaatje's collection of *Sechuana Proverbs*, this being the first publication by a member of this South African tribe. Plaatje also appears as collaborator with Daniel Jones in the composition of *A Sechuana Reader in International Phonetic Orthography*. Jones's phonetic researches prove quite definitely that the Bantu as well as the Sudanese languages are characterized by differences in pitch as normal elements of speech.

Mrs. Brenda Z. Seligman (*Man*, XVII, pp. 62-66) points out interesting similarities in "The Relationship Systems of the Nandi, Masai and Thonga." The explanation of the resemblances is found in the common practice of a particular form of marriage,—that between a man and his wife's brother's daughter. This is an observed institution among the Thonga and is inferred for the other two tribes.

America. The inauguration of a new *International Journal of American Linguistics* has already been mentioned. Under the editorship of Franz Boas and P. E. Goddard, assisted by W. Thalbitzer of Copenhagen and C. Uhlenbeck of Leyden, it is likely to become one of the foremost organs of philological research in the world. As symptomatic of the synthetic tendency so pronounced in recent years may be cited the significant utterance of one of the most competent collaborators, E. Sapir, to the effect that the fifty-seven linguistic families hitherto officially recognized will be ultimately reduced to not more than about sixteen. On the other hand, a more skeptical attitude is maintained editorially. In his "Introductory" statement Boas explains that while far-reaching morphological resemblances may be based on community of origin the absence of historical data for primitive languages precludes the evidence from becoming demonstrative; what is interpreted by some as the result of an ultimate connection may be due merely to assimilation resulting from contact. Accordingly, Boas regards the minute study of dialectic differentiation as affording a more promising field for research than the quest for remote relationships. He likewise calls attention to the study of literary form as a well-nigh neglected but extremely fruitful task for the linguist. In spite of all methodological warnings the consolidation of languages once reckoned as distinct is progressing merrily, especially in California, where Yuki now remains as the solitary isolated form of speech, all others having been linked with larger groups. In "The Position of Yana in the Hokan Stock" (*Univ. of Cal. Publ. Amer. Arch. and Ethnol.*, vol. XIII, no. 1) E. Sapir defines the characteristics of a language formerly regarded as representing a separate family while it can now be united with Shasta, Pomo, Yuman, Seri, and others under a single head. Its late inclusion is, however, intelligible from its aberrant character, since it is the only Hokan tongue devoid of prefixes and displays an unusual abundance of derivative suffixes. A linguistic contribution of a different order is supplied by P. E. Goddard to whose *Beaver Texts* with interlinear English rendering, there is affixed a series of phonetic tracings secured with the Rousselot apparatus.

An altogether unique publication is Wissler's *The American Indian.* It forms the first attempt to synthetize all available information on the American aborigines, not only ethnologically, but somatologically and archæologically as well; the inclusion of South America within the scope of the work constitutes an especially noteworthy feature. As regards the question of origins, Wissler supports the accepted view that the Indians of the New World are genetically allied with the Mongoloid race. He conceives a detachment of Mongoloid people migrating into America at the opening of the Neolithic period of Asia, which need not have been altogether contemporaneous with that of Europe. Simpler traits of culture, such as the firedrill and stone technique, were imported from Asia, but the higher civilizational complexes, such as agriculture, pottery, bronze work, and weaving, certainly evolved on American soil.

The present tendency in archæological research, with its emphasis on the establishment of a definite chronology is well illustrated in U. A. and A. V. Kidder's "Notes on the Pottery of Pecos" (*American Anthropologist*, 1917, pp. 325-360). Here also the working hypothesis is advanced that glazing developed in the Little Colorado region and thence spread to other centres of Southwestern ceramic art. A preliminary report has been published by N. C. Nelson on the "Archæology of Mammoth Cave and Vicinity" (*Proc. National Acad. Sciences*, vol. III, pp. 192-195, March, 1917). Nelson's investigations are significant in that he discovered in Mammoth Cave a deposit of kitchen refuse with remnants of animal bones and shells, bone and antler implements, crude limestone pestles, but without a trace of either maize or pottery or finer examples of polished stonework. While not geologically ancient, as the faunistic concomitants show, these finds establish a very primitive culture that must be considered antecedent to the Moundbuilder civilization of this area. A relatively later stage in the development of this latter culture seems to be represented at a site about three miles away in an airline, where a thin layer of ashes was found to contain bits of flint and fragments of pottery.

Significant suggestions as to the possible evolution of North American society as a whole are thrown out by C. M. Barbeau in articles entitled "Iroquoian Clans and Phratries" and "Parallel between the Northwest Coast and Iroquoian Clans and Phratries" (*American Anthropologist*, vol. XIX, pp. 392-402, 403-405). Barbeau argues that the clans and moieties (phratries) of the Iroquois are genetically unrelated, the clan being the basic unit which enjoys a far wider distribution and has survived the breakdown of the phratric division. He further contends that the various definite clan organizations of the continent probably had a common origin, having spread from a single centre of diffusion.

Kroeber's *Zuñi Kin and Clan* marks an epoch in the study of Pueblo ethnology, for the almost exclusive attention of investigators to archæological and ceremonial topics had prevented them from sufficiently clarifying the intricate social system that characterizes the Southwestern area. For one thing, Kroeber definitely disposes of the hoary belief that the matrilineal institutions of the Zuñi are coupled with a matriarchate. The slender basis for this fallacy lies in the ownership of the houses by the women, who transmit them to their daughters. Apart from this undoubted property right to the dwelling, the women do not play a particularly prominent part either in private or public life. While clan affiliation depends on that of the mother, the father and the paternal relatives figure on equal terms in many social relations and ceremonial activities. The importance of the clan factor in Zuñi life has thus been vastly overrated. It is true that certain offices in the medical fraternities and masked ceremonials, are linked with definite clans; and this likewise applies to the guardianship of the fetishes that play so remarkable a part in Zuñi religion. But otherwise the clan is completely overshadowed in social importance by the family. There is no council of the clan members as such nor is there a clan house or head; property likewise is not associated with the clan but either with the tribe as a whole or with single families. Even as regards the exogamous clan functions, it should be noted that marriage into the father's clan is also disapproved, though not so strongly as within the mother's. One of the most illuminating results of Kroeber's discussion is definite proof that the same clan scheme is common to all the Pueblo Indians. Not only are similarly or identically named clans found among the Zuñi, Hopi, Keresan, and Tanoan peoples, but the actual or theoretical linkage of these clans into social units of a higher order is remarkably uniform throughout the region. A far-reaching historical connection is thus established among the tribes of New Mexico and Arizona. The kinship system of the Zuñi lends partial support to the theory that a classificatory nomenclature is the concomitant of a clan or gentile organization. However, there are other features, among them an unusual tendency towards teknonymy, i.e., the designation of a relative as So-and-so's parent.

In *Plains Indian Age-Societies: Historical and Comparative Summary* R. H. Lowie sums up the present status of the problems suggested by these organizations on the basis of investigations conducted by the American Museum of Natural History for the last sixteen years. It is certain that the scheme found among the Arapaho, Gros Ventre, Blackfoot, Mandan and Hidatsa had a common origin. Internal evidence shows that its starting-point must be sought among the two last-named Village tribes, by which it was transmitted at one time to the Blackfoot and at another to the Arapaho. The resemblances in detail are such as to prove that direct contact once existed between the Village groups and the other tribes, and since such intercourse is without documentary evidence new light is thus shed on the early historical connections that obtained in the Plains area. The age-societies of the Indians display certain similarities to the clubs of Melanesia and the age-classes of the East African Masai. Nevertheless these resemblances are largely superficial. The Melanesians accentuate the purchase factor that is so strongly developed in America but there is no suggestion of an age-grouping, advancement being a purely individual affair. On the other hand, the Masai share the collective promotion of the Indian tribes but have neither definite societies nor a trace of the purchase idea. The Plains Indian system is thus a unique synthesis of two features,—the formation of a definite group of approximate age-mates and their collective acquisition of higher degrees. But while these societies thus represent a social phenomenon *sui generis*, they also exemplify a widespread fact of human society —the tendency of age-mates to unite in definite social groups.

S. A. Barrett has furnished a brief description of "The Washo Indians" (*Bulletin Publ. Museum*, Milwaukee, vol. II, no. 1), a hitherto neglected tribe living about the boundary line of Nevada and California in the Lake Tahoe region. They turn out to have very strong cultural affinities with Californian peoples, especially in the use of the acorn as food, in the erection of conical slab dwellings and semi-subterranean ceremonial houses, and in the prominence of fine coiled basketry. On the other hand, Plateau relations are even more marked, the methods of hunting, fishing, and preparation of food being identical. The twined basketry manufactured and the stone hand-mill also coincide with those of the Plateau. A characteristic feature of Washo culture is the importance of the rabbit chase, which was presided over by a hereditary chief, distinct from the tribal headman, who directed all organized hunting and fishing operations. The same author has devoted two papers, "Ceremonies of the Pomo Indians" and "Pomo Bear Doctors" (*Univ. of Cal. Publ. in Amer. Arch. and Ethnol.*, vol. XII, nos. 10 and 11) to the ritualistic and shamanistic observances of an important Californian tribe. While the Pomo culture is characterized by the absence of calendric rites and the lack of a definite priesthood, the ceremonialism of the people reached a fair degree of development. In most of the dances men and women participated on equal terms, in others the number of each sex was fixed, while in still others there was restriction of membership to either men or women. However, the Ghost Dance, which perhaps represents the most important of the rituals, was restricted to properly initiated men, and thus corresponds to the secret organizations of neighboring tribes. The dancers impersonated the spirits of the dead and in this character entered the ceremonial house backwards, expressed the opposite of their real meaning, and otherwise tried to convey the impression that the spirits of the deceased were unused to mortal ways. Certain participants acted as both sergeants-at-arms and as clowns, but the spectators were not permitted to express mirth at their buffoonery. The most spectacular part of their activities consists in their jumping into the fire, picking up live coals and pretending to devour them. Among several Californian peoples there is a belief in "bear doctors,"—shamans deriving supernatural powers, bear-like characteristics, and invulnerability through an ursine tutelary spirit, who also endows them with the power to transform themselves into bears at will. In striking contrast to the Miwok and Yuki, the Pomo did not connect the "bear-doctor's" powers with a revelation granted by a bear but solely with the qualities of his bear-skin suit, which was invested with magical attributes by a series of ritualistic performances. While the bear-doctors of other tribes were often genuine shamans deriving their functions from the guardian spirit and exercising their abilities in the interests of patients, those of the Pomo were malevolent sorcerers plying their profession in secrecy and liable to death on detection by fellow-tribesmen.

E. W. Gifford has continued his publications on sociological aspects of Californian culture, in a paper on "Tübatulabal and Kawaiisan Kinship Terms" (*Univ. of Cal. Publ.*, vol. XII, no. 6), embodying a comparison of Shoshonean kinship nomenclatures. Kroeber's "California Kinship Systems," which has already been cited for its theoretical discussion, must be mentioned again as a contribution to Californian ethnography, inasmuch as the author compares, classifies, and discusses from an historico-geographical point of view the terminologies of Californian Indians. Another phase of aboriginal culture is revealed in Gifford's collection of "Miwok Myths" (*Univ of Cal. Pub.*, vol. XII, no. 8), which supplies a series of tales current among one of the most important peoples of the central portion of the State.

A succinct survey of present knowledge on the ancient culture of Central America is supplied by H. J. Spinden's handbook on *Ancient Civilizations of Mexico and Central America.* Waterman has summed up the data on the social organization of part of this area in his treatise on *Bandelier's Contributions to the Study of Ancient Mexican Social Organization.* It appears from this review that Tenochtitlan had a division into clans or gentes grouped in four phratries and that the structure of society was fundamentally democratic. Other conclusions drawn by Bandelier as a disciple of Lewis H.

Morgan seem inadequately documented. Paul Radin has published an extensive collection of tales from southern Mexico under the caption *El Folklore de Oaxaca.* In "A Survey of Ancient Peruvian Art" (*Trans. Conn. Acad. Arts and Sc.*, vol. XXI) Philip Ainsworth Means attempts to classify the several types of ancient Peruvian civilization and proposes a chronological scheme, according to which the culture of Tiahuanaco II flourished between 200 and 900 A.D., and that of the Colla between 900 and 1100, and that of Chimu and Nasca between 1100 and 1400. To the same author ethnology is indebted for a comprehensive *History of the Spanish Conquest of Yucatan and of the Itzas.*

EXPEDITIONS, CONGRESSES, PERSONALIA. A number of expeditions have been dispatched under the auspices of the Bureau of American Ethnology: Dr. John R. Swanton visited the remnants of the Houma, Chitimacha and Koasati tribes; Mr. J. N. B. Hewitt spent several months among the Iroquois of Ontario for the purpose of securing further data on the constitution of the League; and Dr. Truman Michelson revisited several Algonquian peoples in the Middle West. In the interests of the U. S. National Museum Dr. A. Hrdlička made an anthropometric investigation of Tennessee mountaineers and a general somatological study of the Shawnee Indians; Dr. W. Hough made archæological excavations at Luna, New Mexico; and Mr. Neil M. Judd resumed archæological researches in Utah. The American Museum of Natural History sent Dr. H. J. Spinden to pursue his studies of Central American ruins; Mr. N. C. Nelson concluded his reconnoissance of the Galisteo basin in New Mexico; Mr. Leslie Spier followed up previous work at Zuñi; and Mr. Earl H. Morris continued excavations at Aztec, New Mexico. By coöperation with the Bureau of American Ethnology the Museum of the American Indian was able to send out Mr. Alanson B. Skinner to join Mr. F. W. Hodge, ethnologist-in-charge of the Bureau, in an investigation of the Zuñi ruin at Hawikuh. For the University of California Mr. E. W. Gifford examined the social institutions of several Californian tribes, paying special attention to the ceremonial activities of the Miwok.

The Nineteenth International Congress of Americanists, which convened in Washington, D. C., in December, 1915, published its *Proceedings* during the year. The American Anthropological Association met in Philadelphia in conjunction with the American Folk-Lore Society during Christmas week.

Several events of a personal nature are of general interest. On January 2, 1917, Sir Edward Burnett Tylor, for decades the dean of English anthropologists died at the age of 84. For an obituary notice see *American Anthropologist*, 1917, pp. 262-268. In honor of Professor Wm. H. Holmes's seventieth birthday a group of his colleagues contributed papers to a sumptuously illustrated *Holmes Anniversary Volume.* Dr. W. H. R. Rivers, the eminent British anthropologist, has been actively engaged in applying psycho-analytic methods to the treatment of officers who have suffered nervous derangement as a result of their war experiences.

ANTIGUA. See LEEWARD ISLANDS.

ANTI-SALOON LEAGUE OF AMERICA. A national league of organizations opposed to the traffic in alcoholic liquors, with 48 subsidiary State leagues, provided with machinery for focusing public opinion upon all national political phases of the alcohol problem. The national printing plant and the executive offices are at Westerville, Ohio, and the Legislative Committee at Washington, D. C., with offices in the Bliss Building. The league, through its general counsel, Wayne B. Wheeler, successfully upheld the constitutionality of the Webb-Kenyon Interstate Shipment Law, the decision on which was rendered by the United States Supreme Court on January 8, 1917. This body was the chief factor in pressing the enactment of prohibition for Alaska, February 2, 1917; the prohibition referendum for Porto Rico, February 20, 1917; the Jones-Randall Anti-Liquor Advertiser Act, February 21, 1917; prohibition for the District of Columbia, February 28, 1917; partial prohibition in the Food Control Law, August 8, 1917; and the submission on December 17, 1917, of a proposed prohibition amendment to the Federal Constitution to the various States for their consideration.

The officers of the league for 1918 were as follows: President, Bishop Luther B. Wilson; general superintendent, Rev. P. A. Baker, Westerville, Ohio; associate general superintendent, Rev. Howard H. Russell, D.D.; secretary, Rev. S. E. Nicholson, Richmond, Ind.; treasurer, Foster Copeland. See LIQUORS.

APARTMENT HOUSES. See ARCHITECTURE.

AQUEDUCTS. THE CATSKILL AQUEDUCT. On October 13 was formally dedicated the Catskill Aqueduct, the first installment of New York's $177,000,000 enterprise, which had been under construction for some twelve years. This work has been referred to from time to time in the YEAR BOOK, but in its completion, it may be mentioned for the notable dams, the Ashokan and the Kensico, the siphons under the Hudson River and the Narrows and the enormous amount of work involved in tunnel, cut-and-cover, and steel pipe siphon. The New York Board of Water Supply, which had this project in charge, was organized in June, 1905, and J. Waldo Smith was selected as chief engineer. A notable engineering staff was assembled and the work well organized, while as consultants a number of the best engineers and scientific men was secured. At the formal acceptance ceremonies in Central Park on the afternoon of October 13, Mayor Mitchel turned on the water which issued forth to a height of 80 feet in the fountain. For a number of months the aqueduct had been used by the city and 250,000,000 gallons per day were available. The high pressure distribution system under the city had been tested and connected with the former distribution mains, and the necessary adjustments were provided for the higher pressure to be used. In a number of cases, there were failures of the previous system of mains, but these were not unduly serious and the entire change over to the new system was effected with a minimum of inconvenience. It was an interesting fact in connection with the Catskill Aqueduct that at the time of its acceptance the cost of the work was $9,000,000 under the estimate, and that water was delivered a year and three months ahead of the time promised. One of the interesting reports made in connection with the aqueduct construction was that of the hydrostatic tests on the 10,300 feet of 36-inch pipe forming the siphon under the Narrows of New York harbor. At a pressure of 130 pounds, a leakage of but 5.6 gallon per minute was observed, and at 100 pounds pressure only 1.5 gallon per minute.

The Shandaken Tunnel. In order to carry out another section of the original project, on September 11, the Board of Water Supply of New York City opened the bids for the construction of the 18-mile Shandaken Tunnel of the New York Water Supply. This tunnel extends from Gilboa, Schoharie County, to Allaben, Ulster County, N. Y., and was to carry water from a new reservoir on Schoharie Creek southerly to the Ashokan reservoir, from which the main water supply of the Catskill Aqueduct flows to New York City. The tunnel was to be a 10 ft. 3 in. by 11 ft. 6 in. horseshoe, concrete lined and grouted in rock, and was to be constructed from light shafts.

The lowest bidder of the work was the Degnon Contracting Company with a bid of $12,138,000, and on November 9, the Board of Water Supply duly awarded the contract despite the protests of the Mayor-elect John F. Hylan and his associates, Controller-elect Charles L. Craig, and Albert E. Smith, President of the Board of Aldermen. The Schoharie Water-shed from almost the beginning was made an essential part of the Catskill project, although its supply did not seem to be needed for many years, and the contract was awarded on the score that with experienced contractors possessed with the necessary equipment, the work could be done better now than if postponed to a later stage.

The Los Angeles Aqueduct. During the year 1917 construction was begun on the Chatsworth reservoir at the upper end of San Fernando Valley, northwest of Los Angeles, Cal. Here was to be provided about 27,000 acre-feet of storage, and the reservoir thus formed was to be the nineteenth and last in the chain of reservoirs of the Los Angeles Aqueduct system. The construction involved two large earth-fill dams and four smaller dams or dikes spanning gaps between the hills, and it was expected that it would require more than a year to construct them. The same system used on other hydraulic dams of the aqueduct, namely, dump cars to convey the material from the steam shovels to a conveniently placed dump, whence it was pumped to the dam, was being followed, and the total yardage to be moved on the work was about 1,040,000 cu. yd. of which 740,000 and 190,000 cu. yd. were to go into the first and second dams respectively. The Chatsworth high line conduit had been finished for several months and was serving the adjoining tracts under irrigation. This line was to be extended about three miles to bring the aqueduct water to the new reservoir. This conduit was to be completed in time to furnish water in the spring of 1918, and thus take advantage of such storage as the work done on the dam would then afford.

Several serious breaks occurred in July on the Los Angeles Aqueduct: the first in the Owens Valley produced by a landslide occasioned by an earthquake, and two others on July 15, one 81 miles from Los Angeles, near Neenac, and the other 165 miles north of Los Angeles, in the Soda Springs tunnel. The Owens Valley break was in an open concrete flume. It was quickly repaired by the use of riveted steel pipe, while the reservoir at Haiwee maintained its service. The Neenac break was below the Haiwee reservoir, where the flow was through covered conduit, and was repaired by the installation of a 9-ft. steel pipe. The break in the tunnel was unexplained, but was promptly restored to service.

ARABIA. The great peninsula of southwestern Asia, lying south of Syria, Mesopotamia, and the Persian Gulf. Most of the country is little known, and fully a third of it quite unknown, to the Christian world. For the most part, government, so far as government exists, is administered by tribal leaders. The estimated area of Arabia is about 1,200,000 square miles, including the Syrian Desert and the Sinaitic Peninsula; without these, about 1,000,000 square miles. The number of inhabitants has been estimated at 7,500,000, but this figure may be regarded as excessive; the country is largely desert, incapable, except in certain districts, of supporting more than a sparse population. The more important divisions or regions of Arabia are: the Sinaitic Peninsula, which belongs to Egypt; bordering the Red Sea, Hejaz and Yemen, nominally Turkish vilayets; between these, the mountainous region of Asir, where Turkish dominion is negligible; at the southwest corner, Aden, which is British; to the east of Aden, along the southern coast, Hadramaut, Mahra, and Shihr; at the southeast, Oman, which is an independent state but under British influence; Hasa (bordering the Persian Gulf northwest of Oman), which, together with Nejd, is nominally a Turkish vilayet; Koweit, on the northwest coast of the Persian Gulf; in the interior, the Syrian Desert, the desert region of Nufud, the Bedouin emirate of Jebel Shammar, Nejd, and, at the south, the great desert territory of Dahna. Of these divisions or regions of Arabia, the first in importance is Hejaz, which contains the sacred cities of Mecca and Medina.

History. The Arabian movement which originated with the Grand Sheriff of Mecca Hussein, who assumed the title of King of the Hejaz in November, 1916, advanced steadily. The defeat of the Turks at Maan was announced on July 12 and thereby the Arabs gained a foothold at the head of the Gulf of Akaba. Meanwhile British naval forces had captured the fort at Saliff on the Red Sea coast. Toward the end of August it was reported that further operations were going on against the Turks and that the Arab forces were carrying out a plan for the systematic destruction of the railway line north of Medina and for the capture of Turkish posts. It was reported that on several occasions the Arabs had attacked superior numbers of Turks and had overcome them.

ARBITRATION, International. See International Peace and Arbitration.

ARBITRATION AND CONCILIATION. Industrial. It has been established that the annual losses from strikes and lockouts in the United States in recent years has been about $250,000,000. This strike loss is, however, only one of various economic factors making steadily for an increased sentiment in favor of more peaceful relations in industry. From the standpoint of the public every advance in industrial organization brings increasing interdependence throughout the entire economic structure with the result that every interruption of industry comes to affect more and more seriously an ever increasing number of persons. The interest of the public therefore in the continued operation of all fundamental industries has grown apace. So important for the established routine of daily life are the facilities for communication and transportation and the supplies of coal, various metals, and such universally consumed articles as sugar that a large group of the public has come to feel that interruption of the supply of these services and commodities must be prevented, even by the use of compulsory methods if necessary.

From the standpoint of the employer still other factors favor methods of conciliation and arbitration. Scientific management studies have shown that the continued "hiring and firing" or excessive "labor turn-over" is a very costly industrial policy. Many plans therefore are being developed to obtain a greater permanency of the working force, such as more careful selection, housing and welfare plans, and methods for the peaceful and judicial settlement of grievances and disputes. Moreover the growth of organization and the consciousness of the power that comes with unity in the ranks of labor have forced many employers to the acceptance of collective bargaining. Consequently an increasing number of trade agreements is characteristic of industrial developments of recent years, including provision for conciliatory methods. From the viewpoint of labor the main reason for the increasing sentiment in favor of methods of arbitration and conciliation is the desire for a voice in the determination of the conditions of work. There is also the desire to be freed from the haunting fear of sudden loss of job through the arbitrary use of executive authority.

The voluntary schemes now being put into operation range all the way from those trade agreements which give labor representatives some voice in determining the major conditions of labor to such elaborate plans as the protocol agreement in the dress and waist industry in New York. In the latter plan provision is made for shop committees to handle grievances and disputes in the first instance, with opportunity for appeal finally to a board of arbitration whose finding is by agreement to be compulsory. Less highly developed plans have been instituted by Hart, Schafner and Marx of Chicago, William Filene's Sons Company of Boston, and the Colorado Fuel and Iron Company. These include plans for the presentation of grievances by any employee, their adjudication by boards composed partly of employees with appeal to higher authorities, even to the head of the business.

The unwillingness of employers, however, to grant laborers a permanent voice in the fixing of working conditions prevents the universal application of the above methods. Consequently State governments have set up various bodies for arbitration and conciliation which either party may call upon to intervene or which in some cases may intervene of their own initiative. Canada has provided for compulsory investigation (see below). New Zealand since 1894 adopted compulsory arbitration; while late in 1916 the United States government passed the Adamson law to prevent a railway strike (see below).

Adamson Law. Owing to a threatened strike on 225 eastern railways in August, 1916, Congress, under the vigorous insistence of President Wilson, enacted the so-called Adamson Law just in time to forestall the execution of the strike order which had been issued to take effect on September 4. This law, variously held to be a wage-law or an hour-law, established eight hours as the normal day for the computation of a day's work and a day's pay for railroad employees. In general it had the effect of granting ten-hours' pay for eight-hours' work. It was to become effective January 1, 1917, but meanwhile suit was brought by the Missouri-Oklahoma and Gulf Railroad Company to test the law's constitutionality. Judge Hook of the United States District Court at Kansas City declared the law unconstitutional; appeal was immediately taken to the Supreme Court. This court entered into an arrangement with the Attorney General whereby records were to be kept by the railways of the time and mileage of employees concerned, with the understanding that if the law was upheld back pay should be given from January 1. The railway brotherhoods were greatly disappointed to find themselves cheated out of the immediate benefits of the law and insisted that it should be put into immediate operation, holding that the act should stand as the law of the land until declared unconstitutional. The union leaders issued a circular to the membership calling attention to the new developments and to the fact that the strike order of August was still in effect.

Argument before the Court was made on January 8, and decision was expected by the men early in February. With the passing of each week they became more and more impatient, until finally on March 12 the brotherhood leaders agreed upon a new strike order to be effective on March 17. They announced that if decision were rendered meanwhile and were favorable there would be no strike; if unfavorable or not rendered at all there would be a strike. They planned a progressive strike, to begin on a few main lines and to spread gradually. They agreed that passenger and milk trains should be run for five days following the beginning of the strike. Eastern roads put up embargoes on freights and Western roads accepted goods for shipment "subject to delay." The governors of Ohio, New York, Maryland, and Wisconsin took steps to use the militia or to operate the roads under martial law, and numerous roads took special measures to protect their property.

Then the government again intervened. The President issued an appeal to both sides and sent a special appeal to the union leaders. He appointed Secretaries Lane and Wilson of the Cabinet and two members of the Council of National Defense, Daniel Willard, president of the Baltimore and Ohio Railway, and Samuel Gompers, president of the American Federation of Labor, to serve as a mediatory body. These men came to New York and succeeded first in securing a postponement of the strike for 48 hours, or from Saturday to Monday. This was for the purpose of enabling the Supreme Court if possible to render its decision, Monday being "decision day." This body then entered into extended deliberations with Elisha Lee, representing the railways and the heads of the railway brotherhoods, with the result that early Monday morning, March 19, an agreement was reached. This was largely due to the strong appeals of President Wilson and Secretary Lane to the railway managers for patriotic regard for the interests of the country in view of the possibility of war with Germany. The agreement reached dealt with various aspects of the war and provided for the establishment of ten-hours' pay for eight-hours' work with overtime at the same rate.

On the same day the Supreme Court by a vote of five to four declared the law constitutional. Chief Justice White wrote the majority opinion in which Justices McKenna, Holmes, Brandeis, and Clarke concurred. Those dissenting were Justices Day, Van Devanter, Pitney, and McReynolds. The majority opinion held the Adamson Law to be workable, not confiscating, nor in excess of the powers of Congress to regulate commerce; they held it to be in effect the application of the power of compulsory arbitration "which it (Congress) undoubtedly possesses." The decision was thus based on the power of Congress to regulate commerce and not on the social justice of laws regulating hours and wages. The decision, however, declared the business of common carriers to be a public business and its continued operation to be a matter of great public concern.

IN CONGRESS. The foregoing events resulted in the introduction of a strike prevention bill in the Senate by Senator Newlands and in the House by Representative Adamson respectively chairmen of the Committees on Interstate Commerce. This bill provided that whenever a dispute should arise between the railways and their employees both sides should notify the Federal Board of Mediation and Conciliation. If this Board should fail to bring about an agreement it should suggest arbitration. If arbitration should not succeed the matter should be referred to the President, who should then appoint a commission of three to investigate. This commission must make its inquiry and report within three months. Either strike or lockout should be illegal until 30 days after this report under heavy penalties. Numerous hearings were held on this measure, but its enactment was interfered with by war legislation.

Another bill was submitted by Secretary of Labor Wilson. This was originally drawn to meet such a situation as that resulting in the Adamson Law, but was subsequently modified to include not only steam railroads but also street railways of the national capitol following a street railway strike in Washington. It provided for a United States industrial adjustment commission to serve as an industrial court for interstate railways and District of Columbia street railways. This commission would have power not only to investigate but to pass judgment upon disputes and issue orders of adjustment. Appeal from the commission's orders to the Federal District and Circuit Courts was provided. While the commission could not prevent the dismissal of employees nor their voluntary abandonment of their positions it was believed by Secretary Wilson that it would in most cases prevent either strikes or lockouts by removing the motives therefor.

OTHER FEDERAL ACTION. With the entrance of the United States into the war the need of preventing cessation of industry because of labor disputes became extremely urgent. Consequently the Committee on Labor of the Advisory Commission of the Council of National Defense early in June began the establishment of local committees of mediation and conciliation. Its Committee on Mediation and Conciliation headed by D. Everit Macy of New York decided to establish local committees in the following cities: New York, Boston, Baltimore, St. Louis, Birmingham, Atlanta, Pittsburgh, New Haven or Bridgeport, Cleveland, Indianapolis, San Francisco, Portland or Seattle, Chicago, Philadelphia, Detroit, Salt Lake City, Denver, New Orleans, Kansas City, Louisville, St. Paul, Minneapolis. These committees would contain representatives of wage earners, employers, and the general public to be appointed by Samuel Gompers, chairman of the Committee on Labor of the Council. One of the most important agreements of the year was that between the government and the international unions engaged in American shipyards. This was concluded on August 24 after a strike vote had been adopted by about 100,000 men in the shipyards of the Pacific coast and a walkout had been delayed only by vigorous action of the union officials. There was also much unrest in the shipyards on the Atlantic coast. The compact created a National Board of Adjustment to be a final arbiter as to wages, hours, and conditions of work. The labor unions, all of which belong to the American Federation of Labor, agreed not to strike while the agreement was in force. Awards shall be retro-active as to wage demands; wage readjustments may be demanded after six months; and all labor standards will upon demand be given due consideration. A very significant aspect of this agreement is that it was made directly by the government with representatives of organized labor. President Wilson named D. Everit Macy chairman of the board. Samuel Gompers named Alfred J. Berres as the labor representative; and other members were Assistant Secretary of the Navy Roosevelt and the representative of the Emergency Fleet Corporation. In addition when hearings are held in a given plant a representative of the owner and a representative of the working forces of the plant are to sit with the board and exercise voting power. In case of tie votes Secretary of War Baker or the chairman of the Council of National Defense may decide.

The Secretary of Labor was given authority to intervene as a mediator in labor disputes by the organic law establishing the department in 1913. His services in this respect had steadily increased. In the three years and four months up to June 30, 1916, the Department of Labor had adjusted 232 disputes. In the succeeding eighteen months the Department had intervened in about 200 controversies and had succeeded in adjusting more than 100.

CANADIAN ACT. A Canadian law of 1907 provided for the compulsory investigation of labor disputes forbidding either strike or lockout before the findings of the investigating commission had been made public. In view of the greater interest in the United States various investigations of the working of this law were published in 1917 (see titles below). These tended to show that the law had been far from a complete success. It was found that there had been more than 200 illegal strikes and lockouts affecting more than 8000 employees with a loss of over 3,000,000 working days. It was pointed out that the administration of the act had not fostered respect for law because only $1660 of fines had been imposed up to the close of 1916, whereas under the provisions of the act a minimum of $30,000,000 in fines should have been imposed. Labor opinion regarding the law is much divided, though a majority was either opposed or in favor of changes. In last analysis the enforcement of findings under the Canadian act depends on the state of public opinion; this is the same force upon which voluntary methods of mediation and arbitration depend for enforcement. While opinion as to the final efficacy of the method of compulsory investigation is less optimistic than formerly, nevertheless it has become clear that an essential of any successful method is some plan for supplying the public with an impartial statement of facts.

REFERENCES. B. M. Squiers, *Industrial Disputes Investigation Act of Canada*, summarized in *Monthly Review* of the United States Bureau of Labor Statistics for September and later issued in a Bulletin by that Bureau; B. M. Selekman, *Industrial Disputes and the Canadian Act*, published in the *Survey*, v. 37, and issued in pamphlet form by the Russell Sage Foundation; *Proceedings* of the Board of Arbitration in the controversy between certain railroads and the Switchmen's Union of North America (2 vols.); the *Annals* of the American Academy of Political and Social Science issued volumes entitled *Labor Disputes and Public Service Corporations* and *Present Labor Situation*.

ARCHÆOLOGY. The continuation of the great war has been naturally reflected in a decline in archæological investigations. The Archæological Institute of America held its annual meeting at the University of Pennsylvania, December 26-29, 1917. Dr. James Egbert was elected president.

EGYPT. In Egypt, however, which has felt less the stress of the combat, a certain amount of exploration has continued. Thus at Gizeh the expedition of the University of Pennsylvania has investigated the necropolis adjacent to the pyramid of Cheops. The tombs belonged to priests and lesser officials, and take the form of a shaft cut deep into the rock (that is, to the depth of two to three metres) with a small burial chamber at the bottom. In the earlier of the tombs the body was placed in a shallow pit which was dug in the floor of the chamber. In some instances the body was put in a wooden coffin and the pit itself closed with slabs of stone. Objects usually associated with interment were rarely found. Among the tombs opened were those of Melady and his wife Ruwz. In the chamber of the tomb of the latter was found a table of offerings in an excellent state of preservation. Particularly valuable to the historian is the inscription which appears on this table in that it contains the cartouches of Cheops, Chepren, and Dedefra, showing that these kings followed each other in the order given. The ceiling of the offering chamber of Sokf was vaulted with bricks of mud so arranged as to interlock. This appears to be the earliest example of the use of interlocking brick construction.

At Lisht, in spite of the embarrassment occasioned by the entrance of several of its members into the American and British armies, the expedition of the Metropolitan Museum of Art has steadily continued its work. Further exploration of the area near the pyramid of Sesostris I was carried on. In the course of this work the remains of a smaller pyramid to the southeast of the principal structure were discovered. This tomb had been constructed for some other member of the royal family. In the cemetery of "court" tombs which surround the pyramid temenos were found a number of tomb-chambers, several never disturbed, which yielded interesting examples of funerary furnishings of the period.

After its work at Lisht the same expedition devoted its attention to the site of the Palace of Amenhotep III at Thebes. In the northern part of the area was discovered a building surrounded by an enclosure wall approximately 150 x 200 metres in length. The stamped bricks used in its construction bore the legend: "The House of Amon in the House of Rejoicing." This means "The Chapel of Amon in the House of Rejoicing," and the latter phrase is the regulation appellation of the Palace. From inscribed objects found on the site it was learned that this was the Festival Hall of Amenhotep's second *Sed* festival, celebrated in his thirty-fourth year. Many interesting decorative features of the building were unearthed, such as wall-tiles of blue faïence and the remains of wooden cornices ornamented with inlaid feather pattern of faïence and gilt plaster.

Besides the work thus far reported at Lisht and Thebes the expedition also explored the Tomb of Kenamon in the southern slope of Sheikh Abd el Kurneh, and completed the excavation of its elaborate subterranean burial chambers.

GREECE. In this country little has been done in the way of archæological investigation. It is, however, interesting to record the discovery at Saloniki of an inscription possibly of the time of Trajan which records the honors accorded one Manius Salarius Sabiorus by the city because of gifts which he had at various times made to the city and its people. This Sabiorus was gymnasiarch.

ITALY. That no new excavations of any considerable extent have been undertaken is to be expected when one considers the distracted condition of affairs in this country occasioned by the war. Certain old sites have continued to be worked, however, and discoveries due to building or farming operations have been followed up.

At Acqua Traversa excavations have brought to light what is in all probability the ancient Via Veientana. To the north of this site a *Statio* of Roman date has been examined. It proved to contain a series of large storerooms filled with jars for storage of food.

At Castellina in Chianti, which lies between Florence and Siena, an early Etruscan tumulus has been explored. In several ways it reminds one of the Regolini-Galassi tomb at Cervetri. From it was recovered a lion's head which is one of the earliest examples of Etruscan sculpture. It is interesting to note that it seems to show a relationship with Oriental Greek art. At Cervetri (Caere) important investigations have been carried on. At Fabriano, in Umbria, has been found an Italic chariot. It has been placed in the Museum of Ancona. Its discovery recalls the remarkable chariot now in the Metropolitan Museum in New York City. But it differs from the New York example in being intended for war and not for ceremonial purposes.

At Narce an extensive cemetery has been uncovered. Ostia, which for years has been the site where excavations have been systematically conducted, continues to reward the excavators with interesting finds. Of particular interest is a block of buildings lying to the east of the great temple. So far as can be made out, the building has been subject—at least four times—to reconstruction. Among other buildings uncovered is one showing a niche at one end. This is believed to be a small basilica. To the north of the Temple of Vulcan, also at Ostia, has been discovered a market place, rectangular in plan and containing two courts. Among the houses uncovered two are distinctly interesting for the preservation—in one of remarkably well preserved paintings and in the other of a balcony which ran around two sides of the building. A discovery of the local records of the town of Ostia, or at least of fragments of them, will be of interest to the historian in that they tell of the death of Tiberius at Misenum in the year 37 and speak of the taking of his remains to Rome by the soldiers.

At Pompeii the searchers have discovered the skeletons of four more persons who died at the time of the destruction of the town. The unfortunate persons had sought protection in the house of Trebius Valens, where they were found. From the fact that two wore golden earrings it is known that these two were women. One of the others was a boy. The fourth one is of undetermined sex. At Populonia the excavators have discovered traces of an Etrusco-Roman necropolis. Three tombs have yielded objects of clay and bronze such as vases of Italo-geometric, Italo-Corinthian ware, and bucchero, and fibulæ and a bronze sevard.

Much archæological material has come to light in Rome. In the Piazza Colonna has been uncovered a large group of blocks belonging to Imperial times. From the same site have been recovered two fine heads: one an excellent portrait type of the time of Caracalla, the other that of a child of the Augustan period. Very recently outside the Porta Maggiore a remarkable building has been discovered. Its location is directly under the railroad which runs to Naples and its existence was made known by the slide of dirt under the railroad. The building, which belongs to the second century of our era, is a fine basilican hall with atrium and apse. The hall is richly ornamented with stucco decorations. In the apse the ornament takes the form of a female figure, who may be Aphrodite, pushed along by an Eros. The vaulting of the hall is covered with subjects representing the tribulations of the soul in this world and the attendant punishment or reward in the next. On the walls of the aisles are figures of orantes alternating with ritualistic and sacrificial objects. The main hall is in pure white: the vestibule is decorated at the base of the wall with red and with figures of birds and with flowers. The ceiling is blue. The entrance is peculiar in character, for instead of being in the front of the atrium it was found to the left of that part of the building: that it was meant to be more or less concealed is evidenced by the fact that the corridor which approached it led around to the rear of the building. The building seems to have belonged to some Dionysiac or other religious secret society.

Between the Porta Maggiori and the Lateran some late Republican tombs of interesting type have been discovered. In them were found an interesting group of portrait busts of members of the families who were buried in these tombs. Close to the Catacombs of Pontianus a large Christian cemetery of the sixth to the seventh century has been discovered. Excavations on the site of the Villa Patrizi have brought to light the existence of ancient tufa quarries from which were built the Servian wall and the platform of the temple of Jupiter Capitolinus, and also pozzoluana quarries. These respectively at a depth of seventy and fifty feet are under a villa of Imperial date. On the site of Nero's Golden House a fine domed hall and several rooms with paintings have been discovered. The paintings are especially fine.

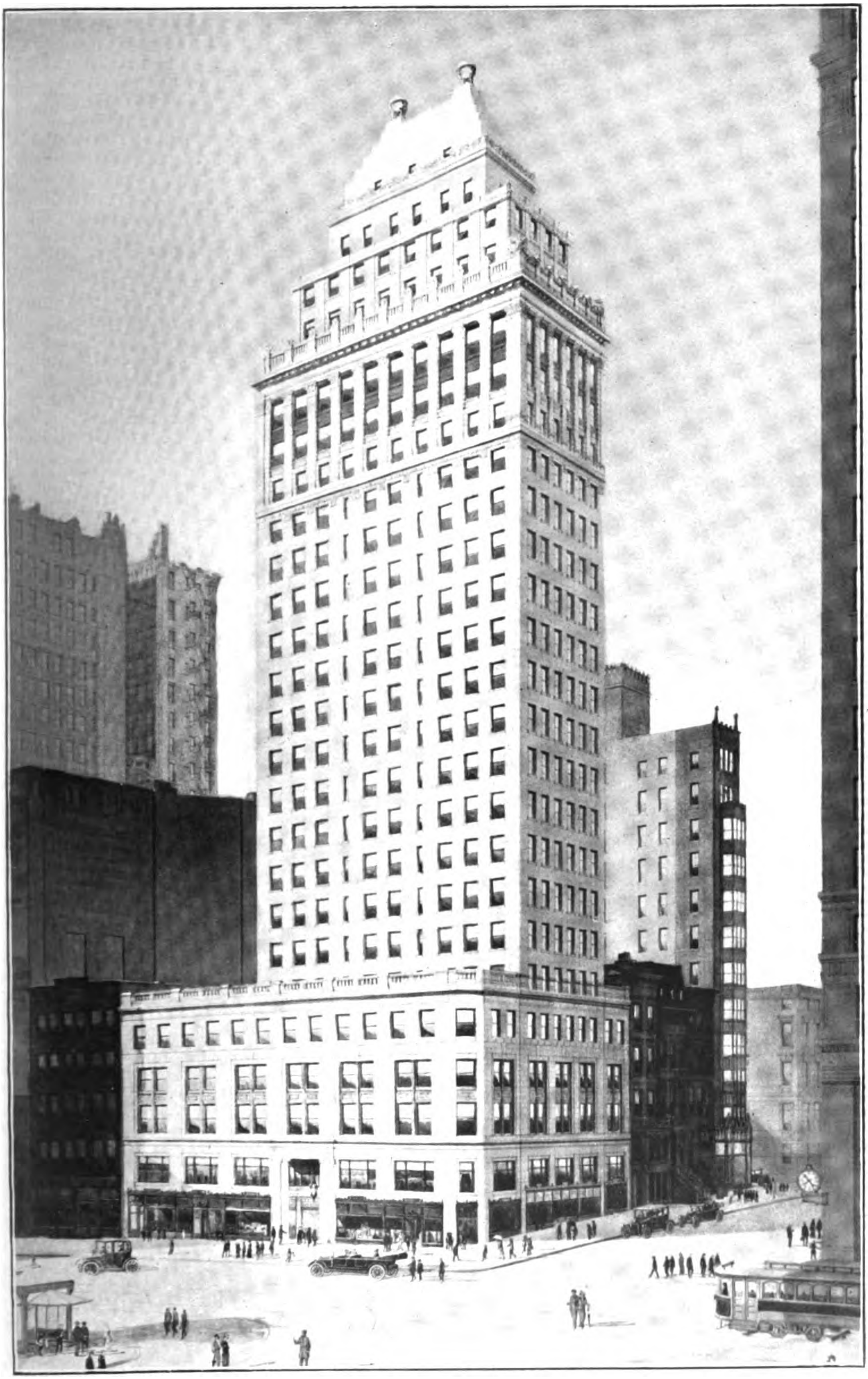
At Sieci (Etruria) the ruins of a Roman bath have come to light, while at Veii, another Etruscan site, other discoveries have been made. In the latter place the foundations of the Acropolis gate have been exposed. Besides this two strata of huts of Italic and Etruscan origin respectively have been found. From the temple site have been recovered a fine series of terra cotta figures. Especially beautiful are the figures of Apollo and Hermes, and the whole group is of exceptionally high order. This work has been conducted by Collini and his staff.

AFRICA. At Cyrene and Tripoli important discoveries of sculpture have been made. Those at Cyrene include a portrait head of the period of the Antonines. The excavation of the precinct of Apollo continues steadily.

ARCHITECTURE. At the close of the third year of the great war, despite numerous conditions of uncertainty, architecture in the United States was by no means quiescent. The country had been prosperous, and until its entrance into the war, had been in a condition by no means unfavorable for the development of architecture. With the inevitable distraction occasioned by actual participation in the war, with the diversion of many architects into active military service, it became apparent that future work would be reduced to a minimum.

It was realized, however, that certain kinds of building, on the other hand, were stimulated by the existence of war to a corresponding degree as certain other kinds were retarded. The sudden and extensive expansion of certain industries called for new industrial buildings, and for large additions to plants and factories already built, while the sudden importation of hundreds and (in some cases) thousands of additional operatives, gave rise to immediate housing problems. These were met, in many instances, by intensive study of parallel problems which had arisen in a number of industrial centres in England, and it seemed reasonable to predict in 1917 that the immediate necessities arising from the housing problems created by the sudden expansion of certain war industries would leave American architects, as well as the executives of many large industries, the richer after the war by having developed new, practical, and intelligent housing solutions which would be of no less value in normal times.

INDUSTRIAL BUILDINGS. In the review of tendencies apparent in the many large machine works and factories built during 1916, it was observed that the latest type is the "daylight



ARCHITECTURE

A NOTABLE TOWER BUILDING IN NEW YORK, No. 50 EAST 42nd STREET
JARDINE, HILL & MURDOCK, ARCHITECTS

factory," in which the object is to provide a maximum of void, or window space, with a minimum of solid, or wall space. The modern factory, then, consists of little more than narrow piers of brick or concrete, with vast expanses of metal-and-glass sash.

Typical of such factory construction were the new Willys-Overland building, at Toledo, O. (Mills, Rhines, Bellman and Nordhoff, architects), and the building for the Wahl Adding Machine Co., at Chicago (Victor Hellstrom, architect). At Flushing, Long Island, the new buildings of the Nathan Manufacturing Co. (Eugene Schoen, architect) afforded a good example from which to study the modern method of designing and constructing industrial buildings. An interesting building, partly an office building and partly industrial, was seen in the new Detroit News Building, Detroit, Mich. (Albert Kahn, architect).

Cost of Building. It naturally transpired that the immediate diversion of labor and materials resulting from the quick erection of barracks, storehouses, etc., in the numerous great army cantonments throughout the country had affected local civilian building. General contractors had found their greatest problem in the labor situation, and many civilian building projects necessarily were stopped or postponed on this account. It must be remembered, however, that this condition existed chiefly in the immediate locality of the several cantonments, and that the only widespread impediment to building projects came from the fear of a railroad freight embargo which would delay or render impossible carload shipments of building materials in favor of moving coal, produce, and merchandise directly connected with the military needs of the country. Such a condition was considered well within the bounds of possibility, and likely to exert a serious effect on building operations.

War Conditions. "Priority Orders" began to affect some manufacturers, who were ordered to give government orders priority over any and all civil orders. For example, orders for brick and structural steel required for a government munition plant made it impossible for the brickyards and foundries holding the order to give precedence in the shipment of brick or steel for use in any private enterprise. These contingencies and restrictions are mentioned here as having affected many building projects of the last months of 1917. But it was to be borne in mind that building activities which suffered during this period would suffer from inevitable restrictions regarding labor and materials: not from any financial reasons.

Typical Buildings of 1917. The following paragraphs, dealing primarily with the more typical buildings of several kinds, will point out a few of the most conspicuous additions to the year's quota of state and city buildings, educational buildings, banks, libraries and museums, hotels and apartment houses, residential architecture, church and memorial architecture, commercial architecture, clubs, and railroad stations. Partly due to general conditions and partly to the continued popularity of motion pictures, no important theatre buildings were under construction at present, and but two which were completed in 1917 seemed noteworthy: the Rialto Theatre, in Chicago, Ill. (Marshall and Fox, architects), and the Schenley Theatre, a pleasing use of the Adam style, in Pittsburgh, Pa. (H. E. Kennedy, architect).

The year 1917 witnessed the completion of the Wisconsin State Capitol, at Madison, Wis. (George B. Post, architect), a conventional building of the type generally associated with state capitols. The plan is cross-shaped, with a dome surmounting a circular Corinthian colonnade above the intersection. The ends of the main structures support classic pediments, with sculpture, above Corinthian columns, the whole representing a typical state capitol, and affording no more occasion for adverse than for enthusiastic criticism. The interiors are sumptuously carried out in rich marbles and elaborate woodwork and the decorations include interesting mural paintings by Albert Herter.

Two new city halls were also to be mentioned, one in San Francisco, Cal. (Bakewell and Brown, architects); the other in Cleveland, O. (J. Milton Dyer, architect). The first is of the familiar "capitol dome" type, though with more feeling of the Beaux-Arts in its handling than of the traditional "Early American" feeling of Washington, or of the old Massachusetts State House in Boston. The Cleveland city hall, a large rectangular building, conveys a far stronger expression of classic dignity. An imposing building of conventionally "governmental" character is the new post office at Washington, D. C. (Oscar Wendroth, supervising architect).

Educational Buildings. Interesting additions were made to a number of college groups, the most noteworthy, perhaps, being the work of Day Brothers and Klander, architects, at Cornell, Ithaca, N. Y., and at the University of Pennsylvania, Philadelphia, Pa. The buildings were, in both cases, dormitories, admirably designed in a free, informal rendering of that traditional English collegiate style which is more Tudor than Gothic. The same style was seen also effectively employed in the new Alumnæ Hall (Walter F. Price, architect) at Mt. Holyoke College, South Hadley, Mass. An interesting study in scholastic architecture which partook of a more Gothic flavor was the Convent and Academy of Notre Dame, in the Boston Fenway, Mass. (Maginnis and Walsh, architects)—a group of buildings in brick and stone, the central feature a boldly unsymmetrical tower.

To the University of Washington, Seattle, Wash., was added a building of Home Economics (Bebb and Gould, architects), designed in a rather stiff and mannered Jacobean style; and to Lafayette College, Eaton, Pa., a chapel (Carrere and Hastings, architects)—a thoroughly scholarly version of the English Renaissance style of Sir Christopher Wren. Three other new college buildings were the Classics Building, at the University of Chicago (Shepley, Rutan, and Coolidge, architects); the University Library, at the University of California (John Galen Howard, architect); and the Walker Gymnasium, at the Stevens Institute (Ludlow and Peabody, architects).

One of the most interesting single college buildings of the year was the Musical Department Building, at Harvard University, Cambridge, Mass. (John Mead Howells, architect), a fine study in Georgian Colonial, with some suggestion of the later manner of Bulfinch. The type of brick Colonial architecture exemplified by the earliest buildings at Harvard had much of national tradition to recommend it, an unusually successful adaptation to be cited was the new group of buildings for Loomis Institute, Windsor, Conn. (Murphy and Dana, architects).

School Buildings. School buildings were receiving constantly greater architectural attention, and proceeded, in 1917, largely along the lines described in the Year Book of 1916. The following were new public school buildings of the modified Tudor type so successfully developed by W. B. Ittner, architect, of St. Louis, Mo.: the Cherry school, Toledo, O. (Edwin M. Gee, architect); the Morrison R. Waite and the Jessup W. Scott schools, also of Toledo, O. (David Stine, architect); the Washington High School, Milwaukee, Wis. (Van Ryn and De Gelleke, architects); and the Grover Cleveland High School, St. Louis, Mo., the Forest Avenue High School, Dallas, Texas, the Central High School, Minneapolis, Minn. (W. B. Ittner, architect).

An exceptional piece of private school architecture was seen in the Taft School, Watertown, Conn. (Bertram G. Goodhue, architect), and an interesting variation in public school design in the Benjamin Franklin School, Portland, Ore. (F. A. Narramore, architect), in which the style was adopted from the Independence Hall group of Philadelphia—red brick, white trim, and a graceful Georgian cupola.

The school architects of California were showing a tendency to deviate from the free Tudor style which has become so popular in the Middle West, and contributed several large school buildings of conspicuous interest and merit. Notable among these were the following: the Grammar School, Chino, Cal. (Withey and Davis, architects), a distinctly Italian design, with a well-designed Palladian entrance; the Grammar School of Glendora, Cal. (Allison and Allison, architects), also Italian, with brick as its material, and also with a Palladian entrance; the Grammar School of Santa Paula, Cal. (Withey and Davis, architects), a school designed in the local Mission style. Another unusual California school building was the Owensmouth High School, at Los Angeles (Henry Harwood Hewitt, architect), an impressive design, with a monumental Corinthian colonnade. The recent architectural attention devoted to public school buildings in the United States was highly commendable, as providing for school children an architectural environment commensurate not only with the dignity of the school as an institution, but tending as well to cultivate an instinctive appreciation of the nature and meaning of architecture.

Banks and Insurance Buildings. Successive years record little if any variation in the conventional treatment accorded to banks and insurance buildings. A Classic order is usually employed, and above the entrance façade, the stories designed for general offices usually compromise, to greater or less extent, the strictly architectural merit of the building as a whole. A typical modern bank and office building of conspicuous merit is the building for the Bankers' Trust and the Astor Trust, at Fifth Avenue and Forty-second Street, New York City (Montague Flagg, architect), carried out in a clean-cut, modernized Italian Renaissance type of detail of the character in which York and Sawyer, architects, have distinguished themselves.

Bank and insurance buildings of rather conventional type, finished during 1917, were the First National Bank, Portland, Ore. (Doyle and Patterson, architects); the Merchants National Bank, New Bedford, Conn. (Alden and Parker, architects); the Colorado National Bank, Denver, Col. (W. E. and A. A. Fisher, architects). The Metropolitan National Bank, Minneapolis, Minn. (Hewitt and Brown, architects), was a building which was esssentially "modern" in its architectural rendering, without being unpleasantly eccentric. The Greenwich Trust Co., Greenwich, Conn. (A. C. Bossom, architect), is agreeably conservative, and the Phoenix Insurance Building, Hartford, Conn. (Benj. W. Morris, architect), was a pleasing departure from the usual "classic," being designed in brick-and-stone Georgian manner of old Philadelphia.

Museums and Libraries. One of the most interesting museums, and one which was commendably appropriate in style to its locality was the Southwest Museum, Los Angeles, Cal. (Sumner and Hunt and S. R. Burns, architects). Crowning a hill, its mass suggested an old Spanish fortress, with low, square towers at either end. Such a utilization of the local style of the early Spanish missions of the Pacific Coast was a promising indication of the growing appreciation now apparent among Pacific Coast architects of the extensive possibilities of their unique architectural heritage. In Cleveland, O., a new Art Museum was completed (Hubbell and Benes, architects)—a small, graceful Classic design of the Ionic order, in white marble. In New York City, constant additions were being made to the great Metropolitan Museum (Hunt and Hunt, architects), that in 1917 being a gallery designed by McKim, Mead and White, architects. In San Francisco, Cal., was seen a large new Public Library building in a pleasing adaptation of Italian Renaissance style.

Hotels and Apartments. In New York City two hotels of major importance were under construction, to be completed during 1918: The Pennsylvania (McKim, Mead, and White, architects), mentioned in the Year Book of 1916, and the Commodore (Warren and Wetmore, architects), a large hotel of design similar to the Biltmore, and forming a part of the extensive group known as "the Grand Central development," in connection with the Grand Central Terminal on Forty-second Street. During 1918 an important part of the Grand Central Terminal plan was to be completed, namely the traffic bridge spanning Forty-second Street and Fourth Avenue, and connecting the grade at Fourth Avenue and Fortieth Street with the raised terrace of the Terminal. The purpose of this bridge, upon which work was commenced in 1917, was to relieve the traffic congestion at this point by diverting all vehicular traffic connected with the Terminal from Forty-second Street.

A few blocks above the Grand Central Terminal the palatial Hotel Chatham (Warren and Wetmore, architects) was nearly completed, designed in an adaptation of the Adam style successfully employed by the same architects in the Ritz Hotel, or Carlton House, nearby. Almost completed and ready for opening in 1918 were two new Statler Hotels (Geo. B. Post, architect: Russell and Crowell, Associated), in Cleveland, O., and St. Louis, Mo., typical modern American hotels operated under a highly efficient centralized management. Among the most interesting of hotels in the United States was the Hotel Traymore, at Atlantic City, N. J. (Price and McLanahan, architects), a colossal seashore resort hotel, of steel and concrete construction, and strikingly original design.

Additions to New York City apartment houses showed little departure from the developments of recent years, the past decade ended in 1917 having witnessed a remarkable advance in architectural merit over earlier efforts. The Apartment House Medal, awarded annually by the New York Chapter of the American Institute of Architects, went to a dignified apartment house of Italian Renaissance design (J. E. R. Carpenter, architect) at Fifth Avenue and Seventy-second Street. Chicago was fortunate in that much of its apartment house development had taken place in an era of far greater architectural enlightenment than that of the first apartments in New York. In Boston one of the most attractive of recent apartment house designs was seen in West Hill Place (Coolidge and Carlson, architects), an admirable rendering of the earliest brick-and-stone style of the older Boston residence. The effect was one of far more pronounced domesticity than is usually expressed in apartment house design, added to which was the desirable element of local suitability.

RESIDENTIAL ARCHITECTURE. A few important city houses in New York are worthy of note, and a survey of the entire country would reveal no architectural tendencies of a nature which would contradict the prevalent eclecticism seen in all residential architecture in this country. One of the most impressive of recent city houses was that of Arthur Curtis James (Allen and Collins, architects) in New York City. The entrance hall was essentially Byzantine, recalling the old Tiffany house, and H. H. Richardson's "Romanesque Revival." The most notable interior was the vast Gothic living hall, with hooded fireplace, open timber ceiling and tapestried walls. The dining-room was elaborately Georgian.

An interesting city house, and one expressing rather more of a spirit of domesticity than most, was the house of Reginald De Koven (John Russell Pope, architect), its façade diversified by mullioned bays with casement windows, pleasantly Jacobean, with interiors carried out in the same vein. The most notable city house of Italian Renaissance character was that of J. T. Pratt (C. A. Platt, architect), and the residence of L. Ledyard Blair (Thomas Hastings, architect) presented a study in a dignified, almost severe type of Classic Renaissance.

It would be impossible in the limited compass of this review to give more than passing mention of country house design, which presents to the observer no tendencies differing from those outlined in the YEAR BOOK of 1916. One of the most conspicuous country houses of the year was certainly that of Mr. Deering, at Miami, Florida (Paul Chalfin, architect). Here a great seashore estate, called "Vizcaya," has been developed in the manner of the country places of Renaissance Italy, with elaborate gardens and a palatial villa. Considering the magnitude of the whole project, the architectural merit of its handling might be pronounced highly successful, combining, as it did, the incorporation of many imported antique fragments with new design. Few country estates in America represented nearly so great an expenditure, in buildings, gardening, or interior decoration as were combined in "Vizcaya."

Another stately Italian country house (geographically misplaced at Cohasset, Mass.) was "Torrebianca" (George F. Newton, architect), and still another, more appropriately located, is the country house of I. Waldron Gillespie, at Montecito, Cal. (Cram, Goodhue, and Ferguson, architects). Italian and Spanish styles for country houses were growing increasingly popular on the Pacific Coast, a notable design in pure Spanish being the newly completed Blaney residence (Willis Polk, architect). The Spanish Mission style, too, was receiving more architectural appreciation than formerly, as evidenced in certain far Western buildings for schools and museums, and, specifically, in an interesting country house for D. H. Robert, at Coronado, Cal. (W. Templeton Johnson, architect).

The characteristic "Southern Manor" type was seen in the admirable country house for R. C. Plater, at Nashville, Tenn. (C. A. Platt, architect), and many diverse architectural expressions, as in recent years, were added to the recognized diversity of our country house architects by such prominent designers as Harrie T. Lindeberg, Delano and Aldrich, Lewis C. Albro, John Russell Pope, and Walker and Gillette.

Real estate developments, in which groups of houses of moderate size were planned to constitute a unified design, received successful attention at the hands of country house architects in several localities. The vicinity of Philadelphia, Pa., was especially fortunate in this respect, with Pastorius Park and Linden Court, largely carried out by Edmund B. Gilchrist, architect, and the Half-Moon Group, by Duhring, Okie, and Ziegler, architects, to whose credit were also a number of the best small country houses which have been designed in recent years. At Lake Forest, Ill. (near Chicago), Howard Shaw, architect, designed an interesting group of houses and community buildings not dissimilar from those at Forest Hills Gardens, near New York, largely designed by Grosvenor Atterbury, architect.

CHURCH AND MEMORIAL ARCHITECTURE. The most important church edifice of current architectural interest is the Cathedral of St. John the Divine, on Morningside Heights, in New York City, at present under the architectural direction of Ralph Adams Cram (formerly of the firm of Cram, Goodhue, and Ferguson). Elaborate scale models for the nave have been prepared, and after years of discussion as to whether or not the Byzantine style originally planned by Heins and La Farge should be carried on, it was announced that the nave was to be "exactly and explicitly Gothic," and while not patterned after any European prototype, would suggest the naves of Le Nans and Bourges Cathedrals in France. Mr. Cram stated a belief that the world might enjoy an era not unlike that of the great cathedral builders after the war, and his architectural convictions with regard to the Cathedral of St. John the Divine were but a part of his general convictions as to the permanent desirability of the Gothic Ideal.

While actual work on the great nave was not in progress at the end of the year, two chapels, radiating from the ambulatory, the Chapels of St. James, and St. Boniface (the late Henry Vaughan, architect) had been completed.

The architectural tendency toward the Romanesque style for church edifices, noted last year, appears to be growing stronger, conspicuous examples being the Church of St. Agnes, Cleveland, O. (John T. Comes, architect); St. Mary's Church (R. C.), Akron, O. (E. T. P. Graham, architect); and the Church of St. Gregory (R. C.), Brooklyn, N. Y. (Helmle and Corbett, architects). An interesting feature of the last-named is seen in the *fresco buono* decorations by Maximilian F. Friederang, carried out in the technique of Renaissance Italy, now almost a lost art.

An architectural manner approaching more nearly than anything else "English Domestic" was seen in two interesting church buildings in New Jersey: Holy Trinity Rectory, at Hackensack (Raphael Hume, architect) and Trinity Parish House, at Newark (Upjohn and Conoble, architects). Among small churches, a distinctively primitive and rugged style, suggesting the ancient Parish Churches of Ireland, was most successfully employed in St. Brigid's Church (R. C.), at Westbury, L. I.

One of the most notable memorials of the year was the Mary Baker Eddy Memorial (E. T. Swartwout, architect), erected by the Christian Scientists at Mt. Auburn Cemetery, Cambridge, Mass. The design consisted of a simple, circular hypæthral temple, upon a Classic base, the detail both strong and restrained, and the unusual combination of a palmette capital on a baseless Doric shaft was remarkably well managed. Three private Mausoleums are well worthy of note: the Stewart Mausoleum (John Russell Pope, architect), the Jules Bache Mausoleum (Davis, McGrath, and Kiessling, architects), both at Woodlawn Cemetery, N. Y., and a Mausoleum in Holy Cross Cemetery, Delaware County, Pa. (John T. Windrim, architect).

COMMERCIAL ARCHITECTURE. The tall office buildings in which New York City is already unique among cities of the world counted one addition during 1917 which was of conspicuous and unusual architectural merit. This was the Bush Terminal Building, on West Forty-second Street (Helmle and Corbett, architects), a splendid Gothic tower of brick and terra cotta, excellently designed in both mass and detail. There should be no hesitation in according it a permanent place among the most impressive solutions of the tall building problem in this country, for the traditional forms of the Gothic style have been adopted for use in an essentially modern building in a manner which is both sympathetic and forceful.

The Heckscher Building (Jardine, Hill, and Murdoch, architects) and the Postal Life (York and Sawyer, architects), both mentioned in the YEAR BOOK of 1916, were both completed during 1917, and formed important additions to New York's larger office buildings in the uptown district. Two large New York office buildings of the twin-tower type were the Adams Express Building (Francis Kimball, architect), and the American Express Company Building (Renwick, Aspinwall, and Tucker, architects), both important additions to metropolitan commercial architecture, but neither showing any new developments in design.

One of the most unusual of all New York office buildings was a small two-story structure in downtown New York for Culman Brothers (Aymar Embury II, architect), designed in the most refined and restrained kind of Georgian Colonial, of red brick, with white trim. A few attractive store buildings were finished in New York during 1917, but none of great importance in either design or size, excepting the Abercrombie and Fitch Building (Starrett and Van Vleck, architects).

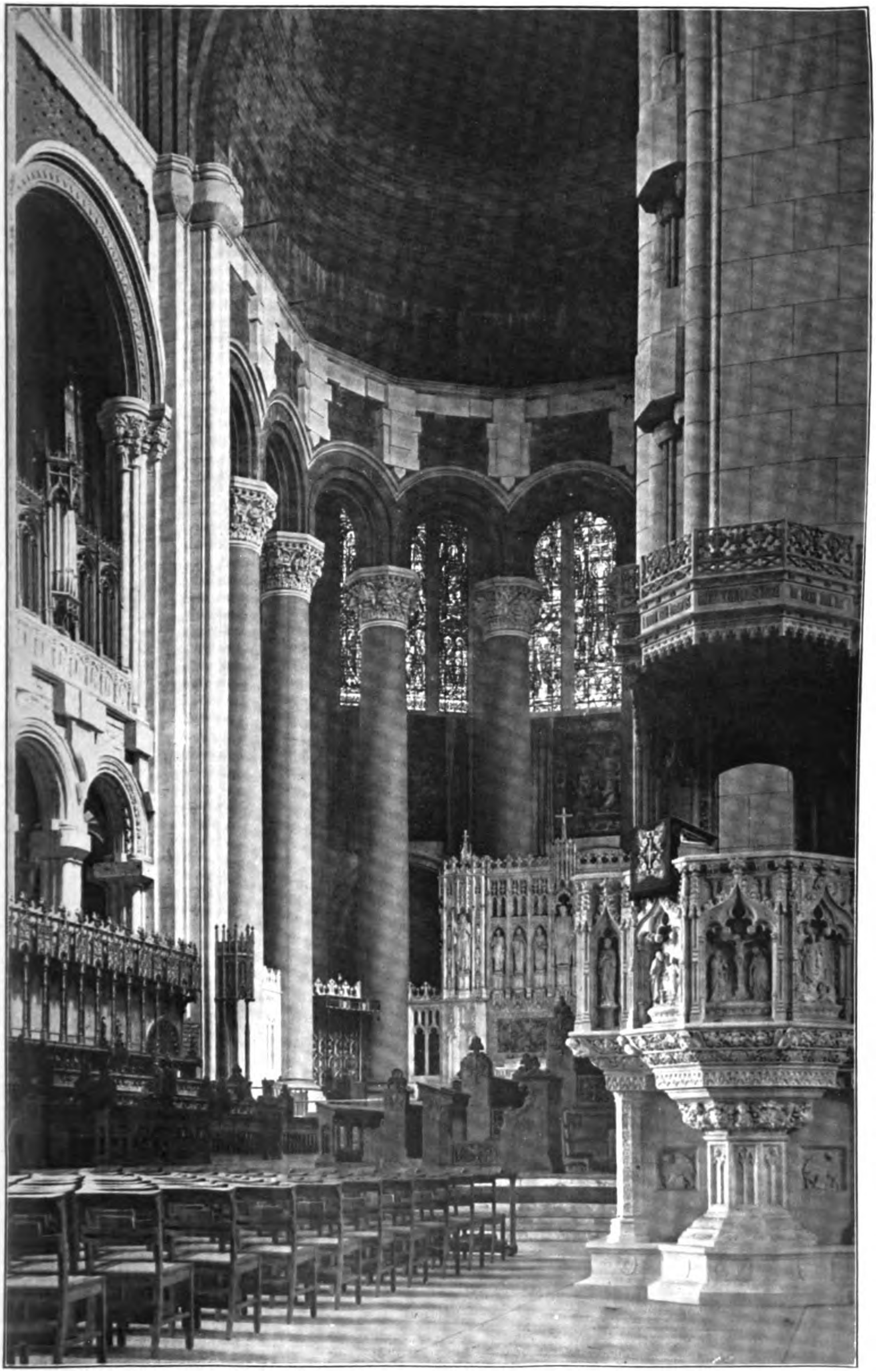
Barely within the realm of "commercial architecture" was the Chalif Dancing Academy Building, in New York City (G. A. and Henry Boehm, architects), a graceful façade of well-disposed brick and colored terra cotta, freely Italian in general character. More stylistically Italian, in the "Florentine Gothic" manner, was the building for Mehlin pianos (Andrew J. Thomas, architect). An interesting bit of commercial architecture in Chicago, Ill., was the Edison Shop (Purcell and Elmslie, architects), indicating by its distinctly modernistic handling that the "Secessionist" school of Middle Western architecture, started by Louis Sullivan and carried on by Frank Lloyd Wright, was by no means dead.

The Union Arcade Building, in Pittsburg, Pa. (F. W. Osterling, architect), was a large "business block" which impressed by reason of its size rather than the architectural success with which its conventional Gothic style is rendered.

CLUBS. The year 1917 witnessed the erection of fewer club buildings than many previous years, perhaps the architecturally notable one in New York City being the Links Club (Cross and Cross, architects), a design consistently Georgian, exterior and interior, the former well detailed in brick and limestone, the latter equally well detailed, and furnished with commendable taste and expression. The Elks Club, in Detroit, Mich. (Van Leyen and Schilling, architects), was conventional in character, and showed some influence of the Adam adaptations in recent hotels designed by Warren and Wetmore, especially in the treatment of the interiors. There was considerably more architectural character in the Women's Athletic Club, San Francisco, Cal. (Bliss and Faville, architects), a building skillfully and colloquially designed in brick.

A notable country club was seen in the Knickerbocker, at Tenafly, N. J. (Aymar Embury II, architect), the free rendering of the local Dutch Colonial style, modified to meet the requirements, effecting right expression of informality for a building of this type. At Corsicana, Tex., a large Y. M. C. A. Building (Shattuck and Hussey, architects) was successfully designed in the Spanish Mission style, bearing out the comment elsewhere in this review to the effect that this native stylistic inheritance has, during the past year, gained considerable popularity in the West and Southwest. It was seen again as the style selected for an important passenger station (Bakewell and Brown, architects), on the Santa Fé Railroad at San Diego, Cal.

Among buildings of conspicuous architectural



CATHEDRAL OF SAINT JOHN THE DIVINE

merit which do not come under any of the classifications covered above were two excellent examples of design in brick. One of these was the bird house for the Zoölogical Society of Philadelphia (Mellor and Meigs, architects); the other the Administration Building of the Essex County Park Commission, at Newark, N. J. (H. Van Buren Magonigle, architect). Both were colloquial studies in Italian Renaissance, with central Palladian features, the Palladian loggia of the bird house being effectively reflected in the waters of a small lake upon which it is situated.

EUROPEAN ARCHITECTURE. Inspiring evidence comes to us from France that the government, not entirely blinded by the dark cloud of war, was assiduously collecting all available drawings and photographs of typical northern French buildings, in order to preserve, when the era of restoration commences, the old, picturesque architectural character of the devastated region. Private individuals, artists, architectural students, and draughtsmen, all were contributing whatever material they had, and from these documents certain French architects were developing working drawings for houses, market-places, city halls, blocks, and whole streets of buildings which would, when erected, do much to repair the ravages of war. That the picturesque character of the old buildings is to be adhered to as the dominant theme of the new villages which will rise over the ruins of the old was but a reassuring evidence that the French had lost none of their fine and sympathetic artistic instincts of fitness and romance.

In England, preoccupation with the war, together with a great diversion of architects in active service, had considerably checked architecture. As in the United States, however, many people had been enriched by the war far beyond their normal expectations, even without "profiteering," so that the erection of country houses had by no means ceased. The problem in this type of building consisted of shortage in labor and materials rather than in any financial stringency.

English architectural periodicals were taken up extensively with photographs of the ruined architectural monuments of Belgium and France, and with controversies and data relative to the effects of explosion and shock upon different types of construction. As an instance, buildings in the vicinity of a considerable munition plant explosion were carefully examined, and it was found that buildings of brick, even a quarter of a mile distant, suffered seriously, sheds which were open at either end were but little damaged, and structures of reënforced concrete were virtually unhurt. As a means of meeting the labor and material problem, English architects and engineers were experimenting with the possibility of reënforced concrete units to take the place of steel and lumber, and the results of these experiments will be of great interest when they become known.

In Germany the cessation of architectural activity may be somewhat conjectured from the statement of an American returned from Berlin, who stated that in that busy and once prosperous capital alone there were from 100,000 to 125,000 vacant dwellings and stores as against 10,000 to 16,000 in times of peace.

By all means the most interesting and inspiring architectural news from Europe was that of the splendid plans of the French government, which, without arrogantly boasting of its "efficiency" or "*kultur*," was quietly but systematically collecting the material which would make possible a real architectural restoration of the incomparably picturesque spots which an enemy "efficiency" and "*kultur*" had destroyed. See CITY PLANNING.

ARCTIC EXPEDITIONS. See POLAR RESEARCH.

ARGENTINA. A federal republic of southern South America. It is called officially *la República Argentina* (the Argentine Republic) and *la Nación Argentina* (the Argentine Nation). The capital is Buenos Aires.

AREA AND POPULATION. The Argentine Republic consists of fourteen provinces, ten territories, and the Federal district. Estimates of the republic's area differ considerably; the one at present most acceptable is 2,987,356 square kilometres (1,153,417 square miles). This area is about 38.1 per cent of the area of continental United States (that is, exclusive of Alaska). The population at the census of June 1, 1914, was 7,885,237 (about 6.84 per square mile), as compared with 4,045,000 in 1895. The census of 1895 showed 3,954,911 inhabitants, but it was estimated that some 30,000 Indians and 60,000 other persons were not recorded. The area and the population, according to the 1895 census and the census of June 1, 1914, are reported as follows:

Provinces	*Sq. km.*	*Population*	
		1895	*1914*
Federal District ...	186	663,854	1,576,597
Buenos Aires	305,121	921,168	2,066,165
Santa Fé	131,882	397,188	899,640
Entre Ríos	75,754	292,019	425,373
Corrientes	86,879	239,618	347,055
Córdoba	173,849	351,223	735,472
San Luis	75,219	81,450	116,266
Santiago del Estero.	143,484	161,502	261,678
Mendoza	146,378	116,136	277,535
San Juan	98,096	84,251	119,252
La Rioja	98,030	69,502	79,754
Catamarca	95,337	90,161	100,391
Tucumán	27,000	215,742	332,933
Salta	125,184	118,015	140,927
Jujuy	38,847	49,718	76,631
Total	1,619,696	3,851,542	7,526,499
Territories	1,367,660	103,369	358,738
Grand total ...	2,987,356	3,954,911	7,885,237

In 1914, males numbered 4,227,023, females 3,658,214; Argentine males 2,753,214, females 2,774,071; foreign males 1,473,809, females 884,143. The total number of Argentines (including children of foreign parentage and 33,219 naturalized citizens) was 5,527,285; foreigners numbered 2,357,952 (of whom 777,845 were in the Federal district). An estimate of the number of inhabitants in 1916 is 8,988,383; but this, like most estimates of Argentine population, is undoubtedly too high.

The largest city of Argentina is the capital, Buenos Aires, which is also the largest city of the Southern Hemisphere and, after Paris, the largest Latin city of the world. It is coextensive with the Federal district, having an area of 18,854 hectares, equivalent to 46,589 acres or about 72.8 square miles. The perimeter of the city is nearly 39 miles. The Río de la Plata at Buenos Aires is about 28 miles wide. The city's estimated number of inhabitants in 1917 was 1,700,000, but this figure may be somewhat excessive. The enumeration of 1909 showed a population of 1,231,698, of whom 561,985 were of foreign birth. Of these, Italians numbered 277,041; Spaniards, 174,291; Uruguayans, 26,784; French, 25,751; Germans, 7444; British, 7113. The development of Buenos Aires into one of the largest and most splendid cities of the world has been very rapid. Its population increased from 76,000 in 1852 to 140,000 in 1864, 404,000 in 1887, and 800,000 in 1900; since the latter year it has more than doubled. The city's rapid growth is due not alone to the constant influx of immigrants; the natural increase is very large, the birth rate in 1913 being 34.16 and the death rate 15.5. The second largest city of Argentina is Rosario, in Santa Fé, with approximately 250,000 inhabitants. Recent population figures for other cities: Córdoba, 135,000; La Plata, 119,000; Avellaneda, 105,500; Tucumán, 100,000; Bahía Blanca, 75,000; Mendoza, 62,000; Santa Fé, 60,000; Paraná, 36,000; Salta, 33,600.

EDUCATION. Education, which is supported by the national and provincial governments and is promoted by many private institutions, is more generally diffused than in some Latin-American countries, and public primary instruction is free, secular, and nominally compulsory between the ages of six and fourteen; but of the population above six years about one-half remains illiterate. In 1913 the reported population of school age was about 1,275,500, of whom some 804,000 were in school attendance. For secondary instruction the national government maintains 30 colleges (about 8800 students), and there are 38 private institutions of the same grade (about 3200 students). Normal schools number 67 (6600 students), and schools for special instruction 34 (6600 students). There are five universities, three national and two provincial. The national universities are: Buenos Aires, with 4364 students in 1915; La Plata, 2184; Córdoba, 584. The provincial universities are Santa Fé and Tucumán. In 1916 the University of Buenos Aires and its affiliated schools had an enrollment of about 9000 students. There is no state religion, but the Roman Catholic Church receives government support.

PRODUCTION. The principal sources of wealth are agriculture and stock raising. Mining has been little developed. The leading industrial business is meat-packing, in the region of the Río de la Plata. Besides flour and preserved meats, manufactures include butter, cheese, sugar, wine, quebracho extract, and textile goods. The flour mills of the city of Buenos Aires and of the provinces of Santa Fé, Córdoba, and Entre Ríos produce about 94 per cent of the total wheat flour output. In 1914 wheat flour production amounted to 908,361 metric tons and the export thereof 67,325 tons; in 1915, 937,770 and 116,049; in 1916, 993,539 and 144,290. In the early part of 1917 there was crop failure and general shortage in Argentina perhaps beyond anything hitherto experienced. Not only was there a smaller area under crop than in the preceding year, but drouth reduced the yield enormously. The following table shows in hectares the area of the principal grain crops in 1915-16 and (preliminary figures) 1916-17, the average for the five-year period 1909-10 to 1913-14, and the percentage of the 1916-17 crop on the average crop for the five-year period:

	Area in hectares			*Percentage*
	1915-16	*1916-17*	*5-year av.*	
Wheat	6,645,000	6,511,000	6,495,744	100.2
Rye	85,600	72,760	34,308	212.1
Barley	174,500	157,050	93,085	168.8
Oats	1,038,000	1,022,000	969,714	105.4
Corn	4,018,850	3,629,570	3,524,850	103.0
Linseed	1,619,000	1,298,000	1,565,434	82.9

Corresponding figures for productions, in metric quintals, are shown below:

	Production in metric quintals			*Percentage*
	1915-16	*1916-17*	*5-year av.*	
Wheat	46,988,000	21,063,200	40,526,152	52.0
Rye	510,000	218,000	355,325	61.4
Barley	1,400,000	471,000	956,937	49.2
Oats	10,927,000	4,878,500	8,118,186	60.1
Corn	40,930,000	......	48,694,000	...
Linseed	9,974,000	1,341,200	8,018,534	16.7

Preliminary figures for the 1917-18 planting showed considerable increases. Number of live stock as reported for 1916: horses, 9,336,445; mules, 583,965; asses, 345,181; cattle, 30,796,447; sheep, 81,185,149; goats, 197,387; swine, 3,197,337.

COMMERCE. The course of Argentine foreign trade in merchandise is shown below in thousands of pesos gold:

	1906	*1913*	*1914*	*1915*	*1916*
Imports	269,971	421,353	271,818	226,893	217,409
Exports	292,254	483,505	349,254	558,281	543,346

The figures here given represent valuations according to customs house appraisements. According to estimates made by the General Office of Statistics of Argentina, true values exceed the statistical values given by the following percentages: 1913, imports 17.7 and exports 7.4; 1914, 18.6 and 15.4; 1915, 34.6 and 4.3; 1916, 68.4 and 5.5.

Principal classified imports, in thousands of pesos gold, in 1915 and 1916 respectively: textiles and manufactures thereof, 51,935 and 65,592; food products, 22,556 and 26,007; iron and steel and manufactures thereof, 18,646 and 20,993; earth, stone, glass, coal, etc., 19,890 and 19,309; oils, grease, etc., 36,140 and 15,679; chemicals and pharmaceutical products 10,590 and 12,497; timber, wood, straw, and manufactures thereof, 4212 and 9383; metals (other than iron and steel) and manufactures thereof, 5870 and 7391; paper and manufactures thereof, 5823 and 7237.

Argentine exports are classified under six general heads. These are shown below, in thousands of pesos gold:

	1913	*1914*	*1915*	*1916*
Live animals and meat products	165,800	151,746	218,780	270,391
Agricultural products	301,267	184,367	312,884	244,132
Forest products	10,618	9,239	19,012	22,452
Mining products	195	84	180	1,192
Hunting and fishing	1,817	1,320	2,045	1,446
Miscellaneous	3,808	2,498	5,380	3,733
Total	483,505	349,254	558,281	543,346
Value in thousands of dollars	468,999	338,777	541,582	527,045

The table following shows some of the more important articles of exports in 1915 and 1916, values in thousands of pesos:

	1915		1916	
	Quantity	*1,000 pesos*	*Quantity*	*1,000 pesos*
Beef cattle.*no.*	103,207	8,101	51,919	1,558
Horses ...*no.*	52,163	4,868	28,314	3,207
Frozen beef... *tons*	351,036	73,718	411,547	93,010
Chilled beef... *tons*	11,703	2,458	16,158	8,651
Frozen mutton ...*tons*	35,085	6,306	51,318	9,468
Salt sheepskins ..*tons*	1,236	247	1,797	898
Unwashed sheepskins . *tons*	20,225	6,806	14,551	6,076
Salt cattle hides ..*tons*	64,248	27,483	77,841	38,399
Flint cattle hides .*tons*	25,579	15,290	21,549	16,254
Unwashed wool ..*tons*	117,670	55,579	171,657	64,278
Washed wool *tons*	......	.....	8,902	1,951
Canned meat *tons*	31,944	8,194	44,569	4,457
Rendered tallow and grease ..... *tons*	49,866	7,765	48,685	9,316
Oats ....*tons*	592,797	19,066	804,443	17,627
Linseed ..*tons*	981,192	46,101	639,914	87,727
Corn ....*tons*	4,330,594	93,475	2,873,910	78,845
Wheat ...*tons*	2,511,514	132,632	2,294,876	96,621
Wheat flour *tons*	116,049	10,072	144,290	9,838
Quebracho logs ...*tons*	209,679	2,684	161,734	2,322
Quebracho extract.*tons*	100,213	15,873	95,547	19,663

Imports of merchandise by principal countries have been as follows, in thousands of pesos gold:

	1913	*1914*	*1915*	*1916*
United States....	62,033	86,684	56,159	68,532
United Kingdom.	130,887	92,475	67,782	61,285
Italy	34,790	24,872	21,168	21.338
France	38,076	22,394	13,311	14,999
Spain	12,390	8,604	11,399	13,477
Brazil	9.259	9,290	10,382	11,898
Mexico	1,854	1,791	15,118	6,520
Uruguay	3,196	2,932	1,880	2,459
Netherlands	4,074	2,801	1,981	2,208
Sweden	3,124	1,884	2,062	2,100
Paraguay	2,271	1,789	2,260	2,068
Switzerland	2,750	1,448	1,537	2,019
Germany	71,312	39,996	5,653	351
Belgium	21,954	12,138	854	276
Austria-Hungary.	5,983	2,548	264	10
Total, including other...	421,353	271,818	226,898	217,409
Value in thousands of dollars	408,712	263,663	220,086	210,887

The table below shows exports of merchandise by principal countries, in thousands of pesos gold:

	1913	*1914*	*1915*	*1916*
United Kingdom..	120,368	102,149	164,972	159,755
United States....	22,895	42,867	89,843	113,488
France	37,719	19,972	40,356	64,738
Netherlands	22,624	11,178	18,831	27,491
Italy	20,039	8,549	40,939	27,148
Brazil	24,809	15.708	21,905	24,498
Sweden	1,074	1,675	5,021	10,084
Spain	4.818	2,405	7,142	8,564
Uruguay	6,801	4,718	7.957	6.488
Denmark	733	775	1,540	6.094
Norway	1,078	1,881	2,797	4,128
Paraguay	1,904	1,216	1,550	2,988
Russia	608	257	.....	2,950
Germany	57,916	80,781	.....	.....
Belgium	32,732	17,506	.....	.....
Austria-Hungary .	3,246	1,377	.....	.....
For orders *.....	117,716	82,624	143,137	75,596
Total, including other...	483,505	349,254	558,281	543,846
Value in thousands of dollars	468,999	338,777	541,582	527,045

* The exports "for orders" are not recorded at Argentine ports as for specific countries, but are subject to cable or other orders for final destination.

Trade by principal ports was as follows in 1916, in thousands of pesos: Buenos Aires, imports 183,401 and exports 272,731; Rosario, 13,474 and 62,187; Campana, 0770 and 23,400; La Plata, 4257 and 52,531; Bahía Blanca, 3229 and 48,367; Zárate, 1517 and 16,578; Santa Fé, 390 and 11,024.

COMMUNICATIONS. The natural tendency of the railway in Argentina has been to converge from the interior to certain eastern ports. Buenos Aires has always been the principal terminal, but Santa Fé and Rosario on the Paraná, and Bahía Blanca to the south on the Atlantic, are important foci of commerce, the shipping facilities being increased to meet the growing traffic. The Province of Buenos Aires is relatively well supplied with lines, Santa Fé and Córdoba being next in this regard. Every political division except Los Andes and Tierra del Fuego has at least one line built or building. With over 22,000 miles of railway, Argentina ranks ninth among the countries of the world, being surpassed by the United States, Germany, Russia, France, India, Great Britain, Austria-Hungary, and Canada.

In 1917 there were in operation from Buenos Aires as a centre 22,688 miles of railway in Argentina. In the steam railway construction, there had been heavy investment by British capital, and in the electrical street railways prior to the war much German capital had been interested. In April the completion of the Patagonian Railway from San Antonio to Lake Nahuel Huapi in the territories of the Rio Negro was planned, while in addition the government contemplated additional lines to open up the territories of Rio Negro, Chubut, and Santa Cruz, all of which had rich agricultural, mineral, and other resources. The government oil fields of Comodoro Rivadavia supplied fuel oil for operation. The railways in the Argentine are subject to the supervision of the Minister of Public Works, who acts through the Direccion General de Ferrocarriles, whose powers are provided in the Mitre Law of 1907. In addition to the steam railways, there were 750 kilometres of electric street railways in Buenos Aires. In 1917, an American syndicate took over $15,000,000 of 6 per cent bonds of the Argentine railways and in the previous year $50,000,000 of Argentine railway stock had been transferred from British to American capitalists.

During the year the railways of Argentina were permitted to increase their rates to cover the increase in wages granted after the recent strike, in addition to the 22 per cent increase in rates granted to cover the higher operating costs, the chief item in which was the cost of coal. While the crops for the year were excellent, it was feared by the railway managers that the roads would not benefit therefrom to any marked degree owing to the shortage of ocean tonnage.

Telegraph lines, as reported for 1915, aggregated 43,153 miles (of which national lines, 23,978 miles), with 131,586 miles of wire and about 2600 offices. Radiotelegraph stations, 20. Post offices numbered 3431 at the end of 1915.

Finance. Argentina's monetary unit is the peso (gold), equivalent to 5 francs, or 96.475 cents. Under the conversion law of 1899, the paper peso is current with a value of 44 per cent of the monetary unit, or 42.449 cents. National revenue and expenditure are reported as follows, in thousands of pesos gold:

	1911	*1912*	*1913*	*1914*	*1915*
Revenue ..	136,633	148,002	153,692	110,030	101,811
Expend. ..	183,291	211,108	177,518	184,641	175,969

The great decline in imports in consequence of the world war has caused a corresponding diminution of import duties, which are by far the largest item of revenue. The budget for 1916 showed an expenditure of 392,870,745 pesos paper, and the revenue was 363,311,775 pesos paper. The budget for 1917 fixed the expenditure at 385,907,701 pesos paper.

The public debt of Argentina in 1900 amounted to 452,486,062 pesos gold; in 1905, 394,253,124; in 1910, 476,739,862; in 1915, 537,582,830. The debt in 1915 consisted of the consolidated debt (external and internal) of 463,146,560 pesos gold and 169,173,340 pesos paper.

Navy. The Argentine navy includes two of the world's large battleships, the *Rivadavia* and the *Moreno*, both launched in the United States in 1911. Each of these has a displacement of about 28,000 tons, 39,500 indicated horsepower, nominal speed of 22.5 knots, 10-inch armor belt, a main battery of 12 12-inch guns, and 12 6-inch guns and 16 4-inch guns. Other vessels include: 1 old coast guard (1880), 4200 tons; 2 old coast guards (1890 and 1891), 4600 tons; 4 armored cruisers, *Garibaldi* (1896), *San Martin* (1897), *Belgraño* (1898), *Pueyrredon* (1898), aggregating 27,400 tons; 3 old protected cruisers, *Twenty-fifth of May* (1890), *Ninth of July* (1892), and *Buenos Aires* (1895), aggregating 11,620 tons; several torpedo-boat destroyers, torpedo boats, river gunboats, etc.

Government. Argentina is one of the five American republics which have the federal form of government, the others being the United States, Brazil, Mexico, and Venezuela. The legislative power is exercised by a congress of two houses, the Senate and the Chamber of Deputies. Senators (30 in number, 2 from each province and the Federal District) are elected for nine years by the provincial legislatures and, in the Federal District, by a special body of electors. Deputies (120) are elected for four years by direct vote. The executive authority is vested in a president, who, with a vice-president, is elected for six years by indirect vote and is ineligible for the next term. The president is assisted by a cabinet of eight members. The president in 1917 was Hipólito Irigoyen, who was inaugurated October 12, 1916; vice-president, Pelagio Luna.

History. On January 30 the resignation of the Minister of Foreign Affairs, Carlos Becu, was announced. He had been appointed on October 12, 1916. On February 9 the government's reply to Germany's notice of the submarine blockade was reported. The Argentine note which was handed to the German minister at the capital declared the government's regret that Germany had taken so extreme a course and that Argentina would insist on conformity to the principles of international law. An extraordinary session was called on January 26 to pass the budget estimates. The budget committee recommended an expenditure of $360,000,000 of Argentine paper money. To this the claims of Deputies added about $20,000,000, bringing the total budget to about $380,000,000 or approximately $167,000,000 in United States money. While this was lower than the previous budgets since 1913 it did not provide for the deficits which had been each year as high as $63,000,000 in United States money.

In April it appeared from the press that the financial situation was extremely serious as a result not only of the European war but of an internal crisis following the failure of the crops. The falling off of the importations had so reduced the customs receipts that the government was obliged to resort to frequent loans to meet expenses. The bank deposits continued to increase while the discounts did not increase in anything like the same proportion and an attempt was made to drive the money into the market by reducing the interest. The government was obliged to renew its debt to meet interest charges and was harassed by the difficulty of finding means of meeting the frequently expiring short time loans. On April 10 the Argentine government presented a note to the American ambassador recognizing the justice of the American attitude and characterizing the German submarine campaign as an attack on the rights of humanity. A large element in the country was now urging the government to follow the same course as the United States.

During the month of April Argentina seemed on the verge of war with Germany. Early in the month the German minister informed the Argentine government that Germany was ready to finance the public works in Argentina. The Argentine vessel *Monte Protegido* was sunk off the European coast by a German submarine and one man in the crew was wounded. This caused hostile demonstrations against Germany in Buenos Aires and the government on April 21 sent a note to Germany demanding complete satisfaction. Meanwhile there had been friction between the two countries as a result of Argentina's placing the German ships in Argentine waters under the supervision of armed guards. Against this Germany had protested but it had been explained officially that it had been done simply to safeguard the destruction of the vessels, the authorities saying that the German crews had not only damaged the machinery to such an extent that it was useless but had bored holes in the hulls of the vessels in order that they might be sunk when the chance presented itself. As to the sinking of the *Monte Protegido* the Argentine minister was instructed to break off relations with Germany if the German government tried to evade the responsibility, but early in May it was announced that the government had received a note from Germany expressing regret for the sinking of the vessel and in view of the fact that the vessel had started on its voyage too early to have heard about the new German measures of submarine warfare the German government was disposed to make reparation. The council of ministers decided that the controversy was closed. On April 28 the National Socialist congress opened its sessions at Buenos Aires. The party was divided on the question of the war, one favoring neutrality and the other wishing to join the Allies. A resolution submitted to the congress by its executive committee to the effect that German submarine methods violated international law and that Argentine vessels ought to be armed was rejected by a vote of 3557 to 2510, and the congress adopted a resolution declaring for neutrality. A difficulty with the German government again arose over the sinking of the Argentine steamship the *Foro*, and it was reported on August 5 that the Argentine government had broken off negotiations with the German minister and had sent a final note to Berlin requiring a definite answer to the Argentine demands within a reasonable length of time. On August 23 Germany replied with a pledge that she would abstain henceforth from torpedoing Argentine vessels. Early in October Germany pledged herself to recognize the Argentine flag and respect the nation and the people, and on October 9 the Foreign Office declared that relations would not be broken off so long as this promise was kept. Nevertheless the war party was strong and the conflict between it and those who favored neutrality was exceedingly bitter throughout the country. Both Houses of Congress voted for the breaking off of relations. Another cause of disturbance was a railway strike embracing the whole system. It resulted in the concession of the strikers' demands.

See UNITED STATES AND THE WAR.

ARIZONA. POPULATION. The estimated population of the State in 1910 was 204,354, and on July 1, 1917, it was 263,788.

AGRICULTURE. The average production and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	32,000	864,000	$1,642,000
	1916	22,000	770,000	1,078,000
Wheat	1917	33,000	825,000	1,782,000
	1916	40,000	1,160,000	1,740,000
Oats	1917	10,000	400,000	384,000
	1916	9,000	338,000	270,000
Potatoes	1917	4,000	115,000	680,000
	1916	1,000	95,000	207,000
Hay	1917	157,000	*a* 550,000	13,640,000
	1916	165,000	627,000	9,092,000
Cotton	1917	39,000	*b* 24,000	3,324,000
	1916	.....	......	......

a Tons. *b* Bales of 500 pounds gross weight.

MINERAL PRODUCTION. The output of gold, silver, copper, lead, and zinc in the State in 1916 was valued at $190,806,170, an increase of $99,999,821 over 1915. The increases are 261,860,874 pounds in copper, 5,323,118 pounds in lead, and 1,457,086 pounds in zinc. The output of gold decreased $180,466, but the production of silver surpassed all previous records. It amounted to 7,212,039 ounces. Arizona is the leading copper-producing State, and had an output for 1916 of 721,833,169 pounds, an increase over the previous year of 261,860,874 pounds, and in value $97,075,808. The output of lead increased 5,323,118 pounds in 1916. The production of zinc increased to 19,677,949 pounds.

The output of gold, silver, copper, lead, and zinc in the mines of the State in 1917, had a total value of over $214,000,000, according to the estimates of the United States Geological Survey. This is the record production of the State, and may be compared with the value of $190,806,170 in 1916. The higher prices of the metals were responsible in part for this increase. The production of gold increased from $3,985,599 in 1916 to approximately $4,831,000 in 1917. The production of silver decreased from 7,212,039 ounces in 1916 to about 6,254,000 ounces in 1917. As the market value was much higher, the average being 81.4, the value increased from $4,745,522 to about $5,000,000. The mined output of copper decreased from 721,833,169 pounds in 1916 to approximately 688,000,000 in 1917. The value of the output increased from $177,570,960 in 1916 to over $200,000,000, in 1917. The mined output of lead decreased from 27,062,087 pounds in 1916 to about 18,000,000 in 1917, but as the price was better, the value was only slightly less than that of 1916, which was $1,867,284. The production of zinc increased from 19,677,949 pounds in 1916, valued at $2,636,845, to about 20,700,000 pounds in 1917.

EDUCATION. The total school population in 1917 was 68,731. The enrollment in the public schools was 55,702, with the average daily attendance of 36,788. The number of teachers, male and female, was 1676. The average monthly salary of males was $126.82, and that of females $106,36. The total expenditure for school purposes was $2,142,948.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include the Arizona State Prison, the State Hospital for the Insane, the Home for the Aged and Infirmed Arizona Pioneers, and the State Industrial School.

ELECTION OF GOVERNOR. The election of governor in November, 1916, was so close, that a special recount was necessary. In the meantime, Governor G. W. P. Hunt, who was the Democratic nominee, refused to turn his office over to Thomas E. Campbell, who, on the face of the returns, had been elected. On January 1, the date for the inauguration, Governor Hunt prevented Campbell from entering the capitol building, and the latter did not insist upon going through the formal ceremony. He had already taken the oath of office before a notary public, and he made an informal address to the people on the grounds of the capitol. Governor Hunt established a temporary executive office in another part of the city. The feeling was high on the part of the partisans of each side, but trouble was prevented by the presence of a large force of officers. On a special recount, Governor Campbell was declared elected, and Mr. Hunt withdrew further opposition. The Supreme Court in December revised the former opinion, and declared that Mr. Hunt had been elected.

On July 12 over 1200 striking miners in the vicinity of Bisbee were deported to New Mexico by armed citizens. The strikers were alleged to be members of the Industrial Workers of the World. See STRIKES.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below:

The laws relating to criminal procedure were amended. Capital punishment was abolished as a result of a vote by the people. Laws relating to estates were also amended. Provision was made that a surviving wife may, without letters of administration, collect sums up to $300 owed to the deceased husband as wages. The legislature petitioned Congress to extend the right of suffrage to women. A general prohibition law was enacted. This declared that intoxicating liquors "shall not be manufactured or introduced into the State of Arizona under any pretense." It was provided that the producers of food products on agricultural lands, farms, and gardens in the State shall never under any pretext be denied or restricted in the right to sell and dispose of the same except that it may be subject to uniform inspection by lawful authority. Provision was made for mothers' pensions.

STATE OFFICERS. Governor, *Thomas E. Campbell; Secretary of State, Sidney P. Osborn; State Auditor, Jesse L. Boyce; State Treasurer, David L. Johnson; Attorney-General, Wiley E. Jones; Superintendent Public Instruction, C. O. Case—all Democrats except Governor, Rep.

JUDICIARY. Supreme Court: Chief Justice, Alfred Franklin; Associate Justices, D. L. Cunningham, Henry D. Ross; Clerk, Clay F. Leonard.

STATE LEGISLATURE.

	Senate	*House*	*Joint Ballot*
Democrats	14	81	45
Republicans	5	4	9
Dem. majority...	9	27	36

ARIZONA, UNIVERSITY OF. Situated at Tucson. Students in the fall of 1917 numbered 519, and there were 64 members of the faculty. Volumes in library, 27,000. Founded in 1885. Co-educational and State institution. Departments: college of letters, arts, and sciences, including, among others, law, education, music, agriculture (Agriculture Experiment Station), mines and engineering (State Bureau of Mines and Mines Experiment Station), extension. There is also a State Pure Food Laboratory and a State School for the Deaf and Dumb. President, Rufus Bernhard Klein Smid, A.M., Sc.D.

ARKANSAS. POPULATION. The estimated population of the State in 1910 was 1,574,449 and on July 1, 1917, it was 1,766,343.

AGRICULTURE. The acreage, production, and value of the principal crops according to estimates of the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	2,800,000	67,200,000	94,080,000
	1916	2,550,000	45,135,000	44,232,000
Wheat ...	1917	210,000	3,360,000	6,754,000
	1916	235,000	1,880,000	3,064,000
Oats	1917	840,000	9,520,000	7,140,000
	1916	850,000	7,350,000	4,998,000
Rice	1917	146,200	5,994,000	11,389,000
	1916	125,000	6,312,000	6,060,000
Potatoes .	1917	30,000	1,625,000	3,768,000
	1916	25,000	2,520,000	3,088,000
Hay	1917	390,000	*a* 573,000	49,000
	1916	375,000	469,000	5,862,000
Tobacco ..	1917	300	*b* 210,000	8,824,000
	1916	500	250,000	50,000
Cotton ...	1917	2,645,000	*c* 895,000	126,195,000
	1916	2,600,000	1,134,000	111,135,000

a Tons. *b* Pounds. *c* Bales of 500 pounds gross weight.

MINERAL PRODUCTION. The coal production in the State in 1916 was 1,994,915 short tons, valued at $3,836,845, as compared with 1,652,106 short tons, valued at $2,950,456, in 1915. About 70 per cent of the total of the State is produced in Sebastian County. All counties showed increases in 1916. There were 3751 men employed in and about the coal mines in 1915, and 3772 in 1916. The lead and zinc mined in the State in 1916 were valued at $1,863,956, compared with $801,754 in 1915. The shipments of zinc carbonate and silicate in 1916 were exceeded only by those of Missouri. They amounted to 16,609 tons, valued at $940,224. Arkansas is the leading State in production of bauxite, the ore of aluminum, the output in 1916 being 375,910 long tons, valued at $2,011,590, compared with 268,796 tons in 1915, valued at $1,370,489. Arkansas is also of importance as a source of manganese ores, shipping 6131 gross tons of high-grade ore in 1916, valued at $176,995, compared with 588 tons in 1915, valued at $10,013.

FINANCE. According to the report of the State Treasurer, the total receipts for the fiscal year of 1917 were $5,396,685; the expenditures were $4,430,314. There was a balance in the Treasury at the beginning of the year of $487,037, and at the end $1,453,408. The bonded debt of the State was $2,000,500.

EDUCATION. The total school population in the State in 1917 was 658,705. There were enrolled in the schools 459,189, and the average daily attendance was 304,230. There were 4591 male and 6178 female teachers. The average monthly salary during the year was $57.42. The total expenditures for school purposes amounted to $4,450,714.

The legislature of 1917 passed a measure providing for compulsory school attendance. In connection with the provisions of this law, children between the ages of 7 and 15 must be sent to a public, private, or parochial school. The minimum session of attendance required under this act is three quarters of the session of the public school in the district in which the child resides.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include the State Hospital for Nervous Diseases, the State Penitentiary, the State Reform School, the Deaf Mute Institution, and the School for the Blind, all at Little Rock, and the Confederate Soldiers' Home, at Sweet Home.

POLITICS AND GOVERNMENT. The 1917 Arkansas legislature called a constitutional convention, which met on November 19, but after organizing and providing for the appointment of committees by its president, it adjourned until July, 1918. The present constitution was adopted in 1874. The legislature submitted two proposed constitutional amendments to be voted upon in 1918—one to increase the number of justices of the Supreme Court from five to seven and the other to provide a system of rural credits. It also passed an act authorizing the borrowing of $750,000 by the State government. A "bone dry" amendment to the existing prohibition law was adopted, and the right to vote in primary elections was given to women. This was, in the main, equal to giving full suffrage to women qualified to vote in Democratic primaries, because the Democratic nomination, in the case of United States Senator, member of Congress, governor, or other State officer, is equivalent to election, and this is true in the largest degree as to the remaining officers—judicial, legislative, county, and municipal—that are chosen by popular vote. Women voted in the Fort Smith and Little Rock municipal primaries. Educational measures passed by the legislature included a compulsory education law, an act placing all State educational institutions upon a millage tax basis, a uniform text-book law, and acts creating an illiteracy commission and granting State aid to rural high schools. Good roads legislation was enacted that enabled the State to receive its pro rata of highway funds under the Shackleford act. The system of property assessments was changed and many changes were made in various measures affecting corporations.

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* See above.

Up to December 20, Arkansas had furnished 21,844 men for service in the land and sea forces, as follows: navy, 1850; marine corps, 72; regular army, 2963; Arkansas National Guard, 6692; national army, 6525; negroes certified to national army and subject to immediate call, 3742. These figures do not include the new Fourth regiment.

The First and Second Arkansas Infantry were stationed at Deming, N. M., in the early part of the year and returned to Arkansas in February, being mustered out at Fort Logan H. Roots on February 22. Upon the declaration of war, the First Arkansas Infantry, composed of 15 organizations, was mustered into the service; and the Second and Third Arkansas Infantry, composed of fifteen organizations each, the Arkansas ammunition train, composed of fifteen organizations, and the Arkansas field hospital and Arkansas ambulance company were mustered in on August 5. These organizations were mobilized at Fort Logan H. Roots and were subsequently transferred to Camp Beauregard, La. In December the War Department gave authority for the raising of the Fourth Regiment and an Engineers' Battalion.

State Officers. Governor, Charles H. Brough; Secretary of State, T. J. Terral; Treasurer, Rufus G. McDaniel; State Fire Marshal and Insurance Commissioner, B. F. Bullion; Attorney-General, J. D. Arbuckle; Superintendent of Education, J. L. Bond, Commissioner of Agriculture, J. H. Page; Commissioner of Public Lands, W. B. Owen—all Democrats.

Judiciary. Supreme Court: Chief Justice, Edgar A. McCulloch; Justices, F. G. Smith, C. D. Wood, T. Hayden Humphreys, and Jesse C. Hart; Clerk of the Court, W. P. Tadler.

State Legislature. Almost wholly Democratic.

ARKANSAS, University of. Situated at Fayetteville. Students in the fall of 1917 numbered 789 and there were 70 members of the faculty. Volumes in library, 25,500. Productive funds, $132,666; total income from all sources about $250,000. Founded in 1871. Co-educational and State institution. Departments, arts and sciences, education, engineering, agriculture (Experiment Station), extension, and medicine (at Little Rock). President, John Clinton Futrall, B.A., M.A.

ARMENIA. A region of western Asia, in Russia, Persia, and, principally, Turkey. The division of Turkey known as Armenia and Kurdistan consists of the vilayets of Erzerum, Mamuret-ul-Aziz, Diarbekr, Bitlis, and Van; the area is estimated at about 72,000 square miles, and the population, prior to the great war, at about 2,470,000. According to a message received from Lord Balfour on February 23 by the American Committee for Armenia and Syrian Relief, 1,200,000 out of the 1,800,000 Armenians who had been in the Turkish Empire two years before had been either massacred or deported. Those who were massacred had often suffered the most extreme tortures and those who had been deported had been the victims of the greatest hardships, many dying from starvation, disease, and exhaustion. They were driven in troops through the swampy regions and deserts of the middle Euphrates where many died of exhaustion and many, when they were unable to march further, were massacred by their captors. See Relief for War Victims and Turkey.

ARMY ORGANIZATION. See Military Progress.

ARTILLERY. See Military Progress.

ARNOLD, Conway Hillyer. An American naval officer, died July 16, 1917. He was born in New York City, November 14, 1848, and graduated from the Naval Academy in 1867. Commissioned as ensign in 1868 he had advanced to lieutenant commander in 1892, and in 1894 he was ordered to take charge of the Branch Hydrographic Office at New York. Later he served on the *Massachusetts*, commanded the *Bancroft* in 1897, and at the outbreak of the Spanish-American War he was made commander. He became captain in 1902 and rear admiral in command of the Third Squadron of the Atlantic Fleet in 1908. He retired November 14, 1910, being at that time president of the Naval Examining and Retiring Boards.

ARRIAGA, Manoel José de. A Portuguese statesman, whose death was announced from Lisbon March 5, 1917. Born in 1842 in the Azores, at Horta, Arriaga received his education at the University of Coimbra, and later studied law. Although he distinguished himself in the practice of his profession, he early entered politics as Republican deputy in the Chamber of Representatives. This was during the reign of Louis I, who found the young politician an uncomfortably vigorous enemy of monarchical institutions. Arriaga identified himself actively with the movement which resulted in the overthrow of King Manuel in 1911 and the establishment of a republic. He became procurator general in the provisional government and under the new constitution was elected first president, August 24, 1911. This meant a triumph for the coalition of conservative Republicans over the Radicals, led by Dr. Alfonso Costa, provisional Minister of Justice. Costa himself was not a candidate but supported Senhor Machado. In May, 1915, after a stormy administration, Arriaga was succeeded by Theophile Braga. The degree of doctor of laws was conferred on him by his alma mater. Arriaga was a poet and also a writer on jurisprudence and on social and political economy. He was famous as an orator.

ARTIFICIAL MILK. See Chemistry, Industrial.

ARTIFICIAL TEXTILES. See Chemistry, Industrial.

ASIA. The largest and most populous of the grand divisions of the globe. Its principal countries are: China, independent republic; Japan, independent empire; Siberia, independent as a part of Russia; Siam, independent kingdom; Turkey, independent empire; India, a so-called empire under British domination; Persia, independent monarchy in part under British and Russian influence; Indo-China, a French dependency. See articles on these and other Asiatic countries.

ASIA MINOR, OR ANATOLIA. A division of Turkey; a peninsula forming the western extremity of Asia, between the Black Sea on the north and the eastern end of the Mediterranean Sea on the south. The estimated area is about 196,000 square miles, very nearly equal to the area of Utah and Arizona. The population may be estimated at about 9,000,000 (some estimates are somewhat higher). The area and population here given are the approximate aggregates of the vilayets of Brusa, Smyrna (Aidin), Konia, Angora, Adana, Sivas, Kastamuni, and Trebizond, and the sanjaks of Ismid and Bigha. The vilayet of the Archipelago (Ægean Islands), which belonged to Asia Minor, is occupied by Greece and Italy. The Mohammedans of Asia Minor are estimated at about 7,180,000; Armenians, 576,000; other Christians, 972,000; Jews, 184,000.

ASPHALT. The natural asphalt of all kinds sold in the sources of production in the United States in 1916 aggregated 98,477 short tons valued at $923,281 compared with 75,751 valued at $526,490, an increase of 22,726 tons or 30 per cent in quantity, in 1915. The sales of manufactured asphalt in 1916 were 664,503 short tons, valued at $4,715,583. This was obtained from petroleum of domestic origin. An increased amount was manufactured during the year from petroleum imported from Mexico. There were in 1916, thirty-seven plants manufacturing asphalt. The States producing natural asphalt were California, Kentucky, Oklahoma, Texas, and Utah. Texas, in 1916, was the largest producer, and was followed by Utah. The asphalt imported in the United States was in 1916, 147,713 short tons, valued at $734,712. The principal use of asphaltic materials in the United States was for highway and pavement construction and maintenance. The asphalt industry in other countries was seriously affected in 1916 by the war in Europe. The amount exported to Europe from Trinidad in 1916 was 13,380 tons, compared with 75,297 in 1914. The exports to the United States decreased from 118,001 in 1915 to 117,719 in 1916, still showing a large excess over 1914, when the corresponding figure was 67,357 tons. Trinidad is the largest producer of asphalt. Venezuela is also a large producer.

ASPHYXIATING GASES. See CHEMISTRY, INDUSTRIAL; MILITARY PROGRESS.

ASTRONOMY. Up to the end of 1917 the war had had little effect on the work of the American observatories, the output during the year being quite up to its usual high standard in both quantity and quality. Nor was there any reason to expect any serious curtailment of their activities, such as was experienced by most of the European observatories from which reports were forthcoming. Many new investigations of variable stars, particularly those of the Cepheid type, were reported, and Shapley announced the discovery of a variable of less than the sixteenth magnitude in the southern globular cluster Messier 9, which was probably the faintest variable known at the time. A new star of the fourteenth magnitude was discovered by Ritchey in the spiral nebula (N. G. C. 6946) in the constellation Cepheus, and two others, one of which was no longer visible at the close of the year, were found by Curtis in the spiral nebula N. G. C. 4321. None of the periodic comets due to return to perihelion in 1917 or early in 1918 was reported up to the end of the year, and only two new comets were discovered. The work on the Mount Wilson 100-inch reflector, and the erection of the Canadian National Observatory, were both reported as nearing completion. Turkey abandoned the Mohammedan calendar for the Gregorian, thus coming into line with the western nations. The death roll of the year included the names of: General J. A. L. Bassot, director of the Nice Observatory since 1904; Professor Friedrich Robert Helmert, director of the Geodetic Institute at Potsdam and of the Central Bureau of the International Latitude Service, famous for his researches in geodesy; and Professor Edmund Weiss, emeritus director of the Vienna Observatory.

MOUNT WILSON SOLAR OBSERVATORY. The annual report of the director, Professor George E. Hale, covered, as usual, a large number of interesting and important results arising from the work of himself and his assistants. The chief results obtained in 1916 were summarized under fifty-one heads; a few only of the more important can be mentioned here. A study of the Zeeman effect in sun-spots near the sun's limb indicated that the lines of force spring from a level below that of the region of the penumbra. Many dark hydrogen flocculi and filaments were identified with prominences. Systematic differences were found between the measurements of close pairs of solar lines given by Rowland and those obtained at Mount Wilson, the latter being the smaller; the differences were largest when the lines were very close to each other. The errors found appeared to be physiological, the observer tending to make the separation larger when the intensity of the continuous spectrum between the lines was reduced below that of the general background. The mutual repulsion of close pairs of lines called for by the anomalous dispersion theory fails therefore to receive the support which a comparison between the Rowland and the International wave-lengths had seemed to lend to the theory. Bipolar sun spots in both hemispheres, irrespective of latitude, were found to be opposite in polarity to the bipolar spots of the corresponding hemisphere observed before the recent sun spot minimum, although the hydrogen vortices still retained the direction of rotation which they had before the minimum. Comparative studies of solar and vacuum-tube spectra negatived the conclusion regarding the presence of electric fields in sun spots which was announced in the director's report for 1915. Professor Kapteyn continued his investigations on the relation between the proper motions and radial velocities of the stars, and announced his discovery of an acceleration of the First Star-stream, but the announcement was made with some reservation, since a more extensive investigation unearthed a number of contradictions. The stars of spectral type B, which had hitherto been regarded as forming a single stream distinct from the two main star-streams, were found to belong almost entirely to the First Stream. A rapid and reliable method of determining the color of a star was developed, in which the ratio of the times of exposure necessary for the blue and yellow light to produce images of the same size was used as a measure of the color, all exposures being made on the same plate; with due care the error in the result can be reduced to about .06 magnitude in the color-index. Observations on the magnitudes in star-clusters and work on the Cepheid variables were continued by Mr. Shapley, whose earlier conclusions regarding the absence of light-scattering in interstellar space and the existence of giant red stars in globular clusters were confirmed. The spectroscopic method of determining stellar parallaxes, developed by Dr. W. S. Adams, was tested by applying it to 124 stars of measured parallax, and gave satisfactory results, the average deviation from the measured value of the parallax being 0" .025. The method was found to be most accurate when applied to stars of spectral types K and M, and least accurate for the F stars. Evidence of the presence of lithium in the sun was found.

The Sun. As already stated in the summary of the work accomplished at the Mount Wilson Solar Observatory, it was found that the magnetic polarity of sun spots was reversed at the recent minimum of solar activity. The first observations were made while the spots of the new cycle were appearing in high latitudes, and it was thought at first that the polarity depended upon the latitude. Later observations on spots appearing nearer the equator showed that this was not the case, and that the reversal of polarity still occurred. Another reversal of polarity was looked for as a possibility of the approaching spot maximum. The question was complicated by the fact that the direction of whirl in the overlying hydrogen vortices was not reversed at the same time, and the evidence seemed to point to a hydrodynamical hypothesis as the true explanation of sunspot phenomena. Further observations at Mount Wilson on the general magnetic field of the sun gave for the inclination of the magnetic axis of the sun to its axis of rotation the value 5°.2, and for the period of its revolution about that axis about 31.5 days.

Investigation of photographs taken with the spectro-heliograph at the Yerkes Observatory between May, 1904, and January, 1917, led Dr. O. J. Lee to conclude that the commonly accepted association of prominences with sun spots and flocculi is not warranted. Out of 4068 prominences of all sizes, which occurred between + 45° and — 45° of solar latitude, only 5.8 per cent were associated with sun spots, and only 8 per cent with flocculi in which no spot was observed; many of the larger prominences were found in unmarked regions of the solar surface. These conclusions were confirmed by Mr. and Mrs. Evershed, who examined nearly 71,000 prominences photographed between 1890 and 1914. They found that there were four belts, two in each hemisphere, which were especially prolific in prominences. The belts near the equator coincided with the sun spot zones, and though the number of prominences was found to be roughly proportional to the number of spots, there was only occasionally direct association of the two phenomena.

Solar Activity. Intense spot activity marked the months of February and August, when two of the four largest groups of spots seen during the past forty-five years made their appearance. The February group, which consisted of two enormous spots connected by a large number of small ones, appeared in the southern hemisphere, and was easily visible to the naked eye, being over 125,000 miles long and 64,000 miles broad; it was under observation during the greater part of the month. It was eclipsed in size, however, by the group which appeared on the east limb of the sun to the north of the equator on August 3. This group attained its maximum area on August 8 or 9. When it crossed the central meridian on August 10, its area had become somewhat reduced, but still amounted to more than 3,600,000,000 square miles, or 3000 millionths of the sun's visible hemisphere. At this time, sixteen other well-defined groups were present on the sun's disc, adding over 3,000,000,000 square miles to the spotted area.

Jupiter's Ninth Satellite. Messrs. Nicholson and Shapley determined the photographic magnitude of the ninth satellite at mean opposition. The magnitude was found to be 18.6, those of the seventh and eighth satellites being 17.5 and 18.0 respectively. In estimating the angular diameter, the color-index was taken as one magnitude, and values of .009 and .006 seconds were obtained, according to the value adopted for the visual albedo. These values correspond to linear diameters of 17.4 and 11.2 miles respectively, between which limits the true diameter probably lies. Professor Nicholson also published a description of the orbit of the satellite. The eighth and ninth satellites were found to move in almost equal interlocked orbits, whose planes are inclined at an angle of about 10°. The motion of the ninth satellite is retrograde, and its period is about 745 days, that of the eighth satellite being 739 days. The two are thus associated in much the same way as the sixth and seventh satellites.

Uranus. Mr. Leon Campbell made the interesting discovery that the light of Uranus varies to the extent of .15 magnitude in a period of .451 day. This agrees with the period of rotation of the planet as determined spectroscopically by Lowell and Slipher. The variation is attributed to unequal brightness of different portions of the surface of the planet, and, if it should prove to be permanent, should afford an accurate method of determining the period of rotation.

Planetary Distances. The empirical law of planetary distances usually attributed to Bode breaks down when applied to the planet Neptune, although it gives very approximately the distances of the other planets. The error in the case of Neptune amounts to nearly 30 per cent, and, in consequence, efforts have been made from time to time to reconstruct the law so as to bring Neptune into line. Among the substitutes suggested may be mentioned the laws developed by Gaussin (1880) and Bélot (1905), which reduce the error in the case of Neptune to 7 per cent and 10 per cent respectively, but at the same time fail to give the other planetary distances with the same degree of accuracy as Bode's Law. When expressed mathematically in terms of a variable η corresponding to the order of the planet in the sequence starting from the sun, all three laws imply the existence of planets where none is known. Thus, Bode's series needs an infinite number between Mercury and Venus for its completion, Gaussin's has room for seven intramercurial planets, while Bélot's series has four gaps between the sun and Mercury and one between Mercury and Venus. Armellini published a new law in which the distance x was expressed by means of the extremely simple formula, $x = 1.53\eta$, where 1.53 represents the distance of Mars from the sun, and η assumes the values — 2, — 1, 0, 1, etc., for Mercury, Venus, Earth, Mars, etc. Two values of η, viz., 2 and 3, give the distances 2.34 and 3.58, which correspond to the limits of the zone of minor planets, while the value $\eta = 6$ calls for the existence of a planet between Saturn and Uranus. This is considered to be by no means an impossibility, though undoubtedly the planet would be extremely small.

The general agreement of the distances according to Armellini with the true distances is shown in the following table, in which those deduced by Bode are also given for comparison.

	η	*Armellini*	*Bode*	*True distance*
Mercury	—2	0.427	0.4	0.387
Venus	—1	0.654	0.7	0.723
Earth	0	1.00	1.0	1.00
Mars	1	1.53	1.6	1.52
	2	2.34	...	...
Minor planets...	3	3.58	2.8	...
Jupiter	4	5.48	5.2	5.20
Saturn	5	8.38	10.0	9.54
	6	12.82	...	...
Uranus	7	19.46	19.6	19.2
Neptune	8	29.76	38.8	30.1

Barnard's Runaway Star. The parallax of this large proper-motion star in Ophiuchus, which was discovered by Professor Barnard in 1916, was determined by several observers. Professor Schlesinger, of the Allegheny Observatory, found a parallax of .52 second, and a proper motion in right ascension of — .73 second. Other values obtained for the parallax were .47 second by Professor Mitchell, of the Yerkes Observatory, and .55 second by Dr. O. J. Lee, of the Leander McCormick Observatory. All three determinations were made by the spectroscopic method. The value must therefore be very nearly half a second, so that the star is the nearest star in the northern hemisphere. Early in 1916 Mr. Innes, of the Johannesburg Observatory, discovered a faint star of large proper motion in the vicinity of α Centauri. He later made a provisional determination of its parallax, which he found to be about .8 second, indicating that the star was about as far away from us as α Centauri. If his estimate should prove to be correct, Barnard's star is the third nearest known star in the heavens.

Daylight Photography of Stars. Some interesting experiments in the daylight photography of stars were undertaken by A. F. and F. A. Lindemann with the object of ascertaining whether it was possible to detect the slight deviation of a ray of light passing near the sun which follows from Einstein's theory of relativity. Panchromatic plates were used, and the exposures were made through red filters which transmitted practically no light of shorter wave-length than 6700 Å. Using a six-inch refractor, they succeeded, in spite of unfavorable climatic conditions, in photographing stars down to the third magnitude at distances as close as 20° to the sun's centre. The deviation at this distance, however, was too small to be detected.

Determination of Star Colors. The photographic method of determining the colors of stars, developed by Seares at Mount Wilson, promised to be of special value because of its independence of the magnitude of the star. The method consisted in taking a series of exposures on the same plate, using a yellow filter for the yellow image and without filter for the blue image, and in comparing the times necessary to give images of the same size. The ratio of the times of exposure was found to give the color-index with a probable error of not more than .06 magnitude. The color-indices were derived from comparison with similar ratios for standard polar stars. An interesting result of the investigation was the confirmation of the absence of faint white stars from the circumpolar region of the heavens.

Minimum Radiation Visually Perceptible. Professor H. N. Russell reëxamined the evidence for the least quantity of radiant energy capable of producing the sensation of light. This was recently shown by Ives to be much smaller than had previously been supposed. The factors which entered into the discussion of the question were four in number, viz., the mechanical equivalent of light, the stellar magnitude of the standard candle, the diameter of the pupil of the eye when accommodated to complete darkness, and the stellar magnitude of the faintest visible objects. The first two of these factors were well determined, and were taken unchanged from Ives's discussion. The values adopted were respectively 1.59 ergs per second per square centimetre for light of intensity one metre-candle and wave-length 0.55 μ, and —14.18 mag. The last two factors were more uncertain. Steavenson had obtained flashlight photographs of eyes accommodated to complete darkness, and found the mean diameter of the pupil to be 8.5 mm., giving as the area of the pupil .57 sq. mm., or just double the value used by Ives. From observations by himself and Curtis, Russell deduced the value 8.5 for the magnitude of the faintest visible stars instead of the commonly accepted value 6. The introduction of these modified factors led to the conclusion that the minimum perceptible radiation corresponded to the reception by the eye of one erg in 40 years, or one gram-calorie in 1700 million years.

The Temperature of Space. In an interesting communication to the *Astrophysical Journal*, Professor Fabry drew attention to the fact that at a point in free space the notion of temperature has no meaning in itself. To make the notion precise, there must be introduced into the region to be studied a small test body which will ultimately assume a certain temperature of equilibrium. The question, however, is complicated by the fact that the temperature of the test body may vary between almost infinite limits, according to the absorptive properties of its surface. Ordinarily the surface is supposed to be perfectly black, and therefore able to absorb the maximum amount of radiant energy. It might therefore be considered that such a body would give the maximum temperature at the point of space under investigation. But such a view would be totally incorrect. A body endowed with absorption, partial but selective, may assume a temperature quite different from that of the black body. It may be enormously higher, or lower, according to the wave-length of the absorption band. A black body isolated in space and exposed to the solar radiation at the distance of the sun from the earth would assume a temperature of 280° abs. But a body capable of absorbing long wave-lengths and only slightly absorbent for short wave-lengths, would radiate like a black body and absorb very little, so that its temperature of equilibrium would be very low, while one capable of absorbing short wave-lengths and non-absorbent for the long wave-lengths would reach a temperature much higher than that of the black body, for only at that temperature would it reach a state of equilibrium. If the sun were abolished, there would remain only the general radiation of the stars. Under such conditions, the black body would attain a temperature of 3° abs., while the test body with an absorbent band in the green would reach 1000° abs. M. Fabry considers it possible that herein lies the explanation of the luminosity of the tails of comets. This has been attributed to cathode rays from the sun, but the luminosity of the aurora borealis, which has been attributed to the same agency, demands a very intermittent cathodic emission which seems irreconcilable with the phenomena observed in comets.

The Beginning of the Astronomical Day. Sir F. W. Dyson, the Astronomer Royal of England, and Professor H. H. Turner, of Oxford University, asked for expressions of opinion by astronomers as to the desirability of adopting the civil day, i. e., the day beginning at midnight, in astronomical ephemerides. The change was recommended as long ago as 1884 at the Washington Congress, but nothing was done, as it seemed at that time to have the observations of a single night all of the same date. Apart from the discontinuity which would be introduced into astronomical records by the change, there would appear to be no other serious difficulty involved. A general agreement among astronomers once reached, a date could be set for the inauguration of the change, which would interfere as little as possible with the preparation of the various national ephemerides.

Daylight Saving and Standard Time in New Zealand. It was proposed to change the standard time of New Zealand from 11h. 30m. fast on Greenwich to 12h. The present standard time was adopted as long ago as 1868, so that New Zealand may be looked upon as the pioneer in a movement which at a much later date received international sanction. By putting the clock forward thirty minutes a permanent saving of daylight of that amount will result, and at the same time the time of the Dominion will be brought into conformity with the International Time Agreement.

Needs of Astronomy. The subcommittee on Astronomy of the Committee of One Hundred on Scientific Research appointed by the American Association for the Advancement of Science issued a valuable report on the most pressing needs of astronomy. Among the principal suggestions for the best use of a large fund for research were the following: the reëstablishment of the friendly international relations of astronomers of three years ago by assisting large astronomical projects either directly or indirectly; the provision of assistants for astronomers, to relieve them of laborious routine work; aid to observatories south of the equator, for the purpose of bringing our knowledge of the southern stars to an equality with that of the stars of the northern hemisphere; the establishment of a computing bureau for the preparation of tables needed for any special or general purpose; and the relief of astronomers, overburdened by teaching, so as to enable them to undertake more research work. The necessity for increasing the facilities for observation in the southern hemisphere was also emphasized in a somewhat similar report issued by the Committee on Astronomy of the National Research Council.

Comets. D'Arrest's Comet was the only periodic comet due to pass through perihelion in 1917. It has a period of 6.67 years, and has been observed at almost every return since its discovery in 1851, its last appearance being in 1910. It was due at perihelion early in April, but, being unfavorably placed for observation, failed of detection. Several other periodic comets whose passage through perihelion was expected to occur during the early part of 1918, also escaped detection. Among these were Tempel I, Brooks II, and Faye's Comet. The reappearance of De Vico's long-period comet of 1846 was expected some time after 1917. As the possible error of its period is three years, there was a bare possibility that it might return in 1917, but the year passed without the announcement of its discovery. Of the comets discovered in 1916, Wolf's Comet (1916 b) was under observation during the greater part of the year. At the beginning of the year it was much fainter than was expected, but it brightened to the tenth magnitude in mid-April, after which it faded to magnitude 11.5 by the beginning of May. During the summer it brightened again until in August it became an object of the eighth magnitude, but it never fulfilled the extravagant predictions of brilliancy which were made for it.

New Comets. Two new comets were discovered in 1917. They were:

Comet 1917 a, discovered by Mellish on March 19. Its perihelion passage took place on April 10, at which time it was very bright, being quite close to the sun. About April 16 it was a conspicuous naked-eye object of the first magnitude, with a tail 10° long. It decreased rapidly in brightness, and at the beginning of May, was only of the fifth magnitude. It soon passed to the southern hemisphere where it was under observation for some time. Its period was variously estimated at 142 years and 189 years.

Comet 1917 b, found by Schaumasse at Nice on April 25. It was of the ninth magnitude, and was described as being a circular nebulosity, of yellowish tint, and possessing a central condensation. It passed through perihelion on May 18. Shortly after its perihelion passage, it was observed to be large and bright, with strong central condensation, its magnitude having increased to 5.5.

The discovery of a third comet was reported from Heidelberg by Professor Wolf on September 14. It was at first mistaken for Encke's Comet, but later it was announced that it was probably a minor planet.

Minor Planets. It was reported from the Harvard College Observatory that the minor planet (129) Antigone had been found to be variable. The range of variability was about .4 magnitude, with a period of two or three hours. A minor planet of about the fourteenth magnitude, discovered by Rev. Joel H. Metcalf, was announced as being probably the smallest known celestial object. On the assumption that its albedo is equal to that of Mars, it was estimated to be not more than three miles in diameter.

OTHER EVENTS. The Janssen prize of the Astronomical Society of France was awarded to Professor George E. Hale, the distinguished director of the Mount Wilson Solar Observatory, for his important researches in solar physics. Professor Hale was also honored by having conferred upon him the degree of Doctor of Science by Columbia University, and that of Doctor of Laws by Princeton University. The gold medal of the Royal Astronomical Society was awarded to Dr. W. S. Adams, of the Mount Wilson Solar Observatory, for his investigations in stellar spectroscopy, and especially for his determination of absolute magnitudes. The Bruce gold medal of the Astronomical Society of the Pacific was awarded to Professor E. E. Barnard, of the Yerkes Observatory, for his distinguished services to astronomy.

LITERATURE. Among the books on astronomy published in 1917 may be mentioned: A. H. Holt, *Manual of Field Astronomy;* E. B. Knobel, *Ulugh Beg's Catalogue of Stars;* J. E. McGegan, *Star Identifier and Diagrams for the Graphical Solution of Problems in Nautical Astronomy;* Rev. T. W. Webb, *Celestial Objects for Common Telescopes* (6th rev. ed.).

ASTROPHYSICS. See ASTRONOMY.

ATHLETICS. See under the various titles such as BASEBALL, FOOTBALL, GOLF, HOCKEY, etc.

ATHLETICS, TRACK AND FIELD. No branch of sport responded more readily to the call to the colors than did track and field athletics. The result was that 1917 was a barren year in the way of record-breaking performances. The majority of the stars hung up their athletic togs and garbed themselves in the khaki of the army or the blue of the navy. Three names, however, stand out in the various competitions of the year. They are Clinton Larsen of Brigham Young University, Provo, Utah; John W. Overton of Yale University; and Andrew B. Kelly of Holy Cross College.

Larsen distinguished himself at the annual athletic carnival held by the University of Pennsylvania at Philadelphia on April 27 and 28 when he cleared 6 feet, 5⅝ inches in the high jump and then leaped over the bar at 6 feet, 7⅝ inches in an endeavor to establish a new world record. Although Larsen in this second effort cleared the cross stick easily he had the misfortune to graze the bar with his shoulder, causing it to fall to the ground.

Later in the season Larsen made another attempt to shatter the world mark in a special meet at his own university. This time he jumped the required height, 6 feet, 7⅝ inches, but the Amateur Athletic Union was unable to accept the record as the meet in which it was made was not held under A. A. U. sanction. The showing of Larsen for the entire season has never been equaled. He took part in seven different meets, establishing an average jump of slightly less than 6 feet, 4 inches.

Overton was the most brilliant performer of the year on the running track. In a one-mile race at Exposition Hall, Philadelphia, in March, the Yale athlete established an American and world record of 4 minutes, 16 seconds; and a week later in the senior national indoor championship games, at the Twenty-second Regiment Armory, New York City, he ran 1000 yards in 2 minutes, 14 seconds, faster time than was ever made before in this event.

Kelly achieved athletic fame at the national indoor championships by running 300 yards, two turns, in 31⅘ seconds. Kelly made the same time twice, first in the trial heat and then in the final.

Soon after the entry of the United States into the war, the Amateur Athletic Union cancelled its championship meets, but later rescinded this action and the national A. A. U. senior outdoor championships were held under the auspices of the Western Association of the A. A. U. and a Citizens' Committee at Washington University Stadium, St. Louis, Mo. The games naturally were not up to the usual high standard due to the absence of many of the leading athletes and clubs because of the war.

The team honors in the national games were won by the Chicago Athletic Association which scored a total of 60 points. The Illinois A. C. finished second with 23 points and the Boston Athletic Association third with 15 points. Unattached athletes accounted for 21 points.

Other clubs to score were: Millrose A. A., New York, 14; Kansas City A. C., 10; Irish-American A. C., New York, 10; Meadowbrook Club, Philadelphia, 8; Pittsburgh A. A., 7; Boys' Club, New York, 5; Toronto (Canada) Y. M. C. A., 5; Brigham Young University, Provo, Utah, 5; Alpha Physical Culture Club, New York, 4; Long Island A. C., Brooklyn, N. Y., 3; Chicago Turngemeinde, 3; Salem-Crescent A. C., New York, 3; Missouri A. A., 3; St. Stanislaus Club, Bay St. Louis, Miss., 3; Multnomah A. C., Portland, Ore, 2; Dorchester Club, Dorchester, Mass., 2; University of Missouri, 1.

In the national A. A. U. junior outdoor championships which were also held at St. Louis the Illinois A. C. won the team title with 47 points. The Meadowbrook Club was second with 30 and the Columbian A. C., St. Louis, third, with 22. Other point winners were: Missouri A. A., 13; Salem-Crescent A. C., 10; Alpha Physical Culture Club, 8; University of Missouri, 7; Boston A. A., 7; Pittsburgh A. A., 5; Germantown Boys' Club, Philadelphia, 5; Chicago Turngemeine, 5; St. Stanislaus A. C., 5; Danish-American A. C., Chicago, 3; Washington University, 3; Kansas City A. C., 2; Paulist A. C., New York, 2; Loughlin Lyceum, Brooklyn, N. Y., 2; Perryville High School, 2; Logan Square A. C., Chicago, 2; Missouri School of Mines, 1; Millrose A. A., 1.

The individual winners in the senior outdoor meet were:

100-yard dash, A. E. Ward, Chicago A. A., 10⅕ seconds; 3-mile walk, G. H. Goulding, Toronto (Canada) Y. M. C. A., 21 minutes, 50⅕ seconds; 440-yard hurdles, F. Smart, Chicago A. A., 54⅘ seconds (equals record); 120-yard high hurdles, H. E. Barron, Meadowbrook Club, Philadelphia, 15 seconds; 1-mile run, J. W. Ray, Illinois A. C., 4 minutes, 18⅗ seconds (new record); 440-yard run, F. Shea, Pittsburgh A. A., 49⅗ seconds; 220-yard low hurdles, F. F. Loomis, Jr., Chicago A. A., 24⅘ seconds;

220-yard run, A. E. Ward, Chicago A. A., 22⅘ seconds; 5-mile run, C. Pores, Millrose A. A., 26 minutes, 26⅖ seconds; 880-yard run, M. J. Devaney, Millrose A. A., 1 minute, 57 seconds; throwing 16-pound hammer, P. J. Ryan, Irish-American A. C., 168 feet, 7½ inches; pole vault, E. Knourek, Illinois A. C., 12 feet, 9 inches; throwing the discus, A. W. Mucks, Chicago A. A., 140 feet, 1½ inches; putting 16-pound shot, A. W. Mucks, Chicago A. A., 45 feet 10⅝ inches; running high jump, C. Larsen, Brigham Young University, 6 feet, 2½ inches; running broad jump, J. Irish, Chicago A. A., 22 feet, 4¾ inches; throwing 56-pound weight, P. J. Ryan, Irish-American A. C., 33 feet, 3 inches; throwing the javelin, G. A. Bronder, Jr., unattached, 184 feet, ½ inch; running hop, step, and jump, D. Ahearn, Illinois A. C., 47 feet, 8 inches.

The national A. A. U. senior indoor championships were contested at the Twenty-second Regiment Armory, New York, on March 17. The team winner was the Chicago A. A., which scored a total of 37 points. The New York A. C. was second with 30 points, and the Irish-American A. C. third with 22. Other point winners were: Millrose A. A., 8; Boston A. A., 8; Yale University, 5; Dartmouth College, 5; Illinois A. C., 5; Meadowbrook Club, 5; Princeton University, 4; Maryland State College, 3; University of Pennsylvania, 2; Long Island A. C., 2; Syracuse University, 1; Victrix C. C., Philadelphia, 1.

The individual winners were: 5-mile run, H. Holden, New York A. C., 25 minutes, 35⅘ seconds; 1000-yard run, J. W. Overton, Yale University, 2 minutes, 14 seconds (new championship and American indoor record); 60-yard run, J. G. Loomis, Chicago A. A., 6⅗ seconds (equals American record); 2-mile run, J. Ryan, Boston A. A., 10 minutes, 4⅕ seconds; 70-yard high hurdles, E. J. Thompson, Dartmouth College, 9⅗ seconds (equals championship record); standing high jump, W. H. Taylor, Irish-American A. C., 5 feet, 2⅛ inches; 600-yard run, E. Eby, Chicago A. A., 1 minutes, 14⅕ seconds; 2-mile walk, R. Remer, New York A. C., 13 minutes, 59⅕ seconds; 300-yard run, A. B. Kelly, Holy Cross College, 31⅗ seconds (new world indoor record); running high jump, J. G. Loomis, Chicago A. A., 6 feet, 2 inches; standing broad jump, J. C. Hoskins, Chicago A. A., 10 feet, 7¼ inches; putting 16-pound shot, P. J. McDonald, Irish-American A. C., 47 feet, 7½ inches (new championship record); medley relay, 1⅞ miles, four men, legs of 220 yards, 440 yards, 880 yards, and one mile, Chicago A. A., J. G. Loomis, E. Eby, S. Landers, and V. H. Campbell.

For the first time in forty-one years the Intercollegiate Association of Amateur Athletes of America failed to hold its outdoor championship games. The Association, however, conducted its third annual indoor meet, inasmuch as the date selected came before the entry of the United States into the war. The games were held at Philadelphia on March 3, the winners in the various events being:

1⅕-mile relay race, Cornell, with Shelton, Acheson, Windnagle, and Crim; 2⅖-mile relay race, Yale, with Rolfe, Ireland, Cooper, and Overton; 4⅘-mile relay race, Cornell, with Wenz, McDermott, Boynton, and Dresser; running high jump (team prize), Pennsylvania; (individual winner) A. W. Richards, Cornell, and C. Thibault, Pennsylvania, tied at 6 feet 1 inch; 50-yard hurdles (team prize), Yale; (individual winner) Farwell, Yale; 50-yard run, (team prize) Harvard; (individual winner) O'Hara, Massachusetts Institute of Technology, 5⅗ seconds; running broad jump (team prize), Cornell; (individual winner) A. W. Richards, Cornell, 21 feet, ½ inch; mile graduate race, Pennsylvania, with Lockwood, Ferguson, Steele, and Meredith, 3 minutes, 34⅕ seconds; pole vault (team prize), Cornell and Pennsylvania tied; (individual winners) Newstetter and Sewell, Pennsylvania, and Foss, Cornell, tied at 12 feet, ½ inch; putting the shot (team prize), Cornell; (individual winner) Sinclair, Princeton, 44 feet, 9½ inches.

The New England intercollegiate championships were won by the Massachusetts Institute of Technology with 61 points. Brown University was second with 50 points and Worcester Polytechnic Institute third with 13. Lafayette captured the Middle States Conference title by scoring 38½ points. New York University was second with 29 points and Swarthmore third with 25¼.

Frederick W. Rubien, secretary-treasurer of the Amateur Athletic Union, made the following selections for All-America Athletic teams for the year 1917:

All-America Athletic Team—60-yard run, J. G. Loomis, Chicago A. A.; 100-yard dash, A. E. Ward, Chicago A. A.; 220-yard dash, M. M. Kirksey, Olympic Club, San Francisco; 300-yard run, A. B. Kelly, Holy Cross College; 440-yard run, F. J. Shea, Pittsburgh A. A.; 600-yard run, Earl Eby, Chicago A. A.; 880-yard run, M. J. Devaney, Millrose A. A., New York; 1000-yard run, J. W. Overton, Yale University; 1-mile run, E. H. Fall, Oberlin College; 2-mile run, Joie Ray, Illinois A. C.; 5-mile run, Charles Pores, Millrose A. A.; 10-mile run, W. Kyronen, Millrose A. A.; cross-country, James Hennigan, Dorchester (Mass.) Club; Marathon, W. J. Kennedy, Morningside A. C., New York; 70-yard hurdles, E. J. Thompson, Dartmouth College; 120-yard hurdles, Robert Simpson, University of Missouri; 220-yard hurdles, F. F. Loomis, Chicago A. A.; 440-yard hurdles, Floyd Smart, Chicago A. A.; walking, William Plant, Long Island A. C., New York; standing broad jump, J. Irish, Chicago A. A.; standing high jump, W. H. Taylor, Irish-American A. C., New York; running high jump, Clinton Larsen, Brigham Young University, Provo, Utah; running hop, step, and jump, D. F. Ahearn, Illinois A. C.; pole vault, Ed. Knourek, Illinois A. C.; putting 16-pound shot, P. J. McDonald, Irish-American A. C.; throwing 56-pound weight, M. J. McGrath, New York A. C.; throwing the discus, A. W. Mucks, Chicago A. A.; throwing 16-pound hammer, P. J. Ryan, Irish-American A. C.; throwing the javelin, G. A. Bronder, Jr., Brooklyn, N. Y.; all-around champion, H. Goelitz, Chicago A. A.

All-America College Team—100-yard dash, J. V. Scholz, University of Missouri; 220-yard dash, C. Hoyt, Grinnell College; 440-yard run, F. J. Shea, University of Pittsburgh; 880-yard run, Earl Eby, University of Pennsylvania; 1-mile run, E. H. Fall, Oberlin College; 2-mile run, J. W. Overton, Yale University; cross-country, I. Dresser, Cornell University; 120-yard hurdles, Robert Simpson, University of Missouri; 220-yard hurdles, E. Streble, Pomona College, California; 440-yard hurdles, Floyd Smart, Northwestern University; running high jump, Clinton Larsen, Brigham Young University; running broad jump, S. Butler, Dubuque College, Iowa; running hop, step, and jump, W. Overbee, University of Illinois; pole vault, W. I. Newstetter, University of Pennsylvania; putting 16-pound shot, A. W. Mucks, University of Wisconsin; throwing 16-pound hammer, B. Bennett, University of Illinois; throwing the discus, M. R. Husted, University of Illinois; throwing the javelin, free style, C. Higgins, University of Chicago; throwing the javelin, regulation style, R. Nourse, Princeton University; throwing 56-pound weight, H. White, Syracuse University; penthalon, Howard Berry, University of Pennsylvania.

All-America Interscholastic Team—100-yard dash, A. Lever, Mercersburg (Pa.) Academy; 220-yard dash, W. B. Hayes, St. Benedict's Prep., Boston; 440-yard run, C. E. Bushnell, Hill School, Pottstown, Pa.; 880-yard run, J. J. Tully, St. Benedict's Prep.; 1-mile run, A. Woodruff, Central High School, Newark, N. J.; 2-mile run, Joseph Nulty, St. Benedict's Prep.; cross-country, Allen Swede, Mercersburg; 120-yard hurdles, W. E. Massey, Jr., Hill School; 220-yard hurdles, D. Rogers, Lake Forest (Ill.) Academy; running high jump, C. Sweet, Lawrenceville Academy; running broad jump, W. Dowding, Bowen High School, Chicago; pole vault, T. P. Gardner, Hill School; putting 12-pound shot, A. Wilson, Radnor High School, Philadelphia; throwing 12-pound hammer, J. Angell, Mercersburg Academy; throwing the discus, R. Wilkinson, Shattuck School, Faribault, Minn.; throwing the javelin, F. Wilcoxen, Oak Park High School, Chicago.

Track and field sports in Europe during 1917 were confined almost entirely to the neutral Scandinavian countries. Sweden held a championship meet at Stockholm in August in which twelve new records were established as follows: 1500-metre run, J. Zander, Stockholm, 3 minutes, 54.7 seconds; 1609-metre run (1 English mile), J. Zander, 4 minutes, 17.5 seconds; 2000-metre run, J. Zander, 5 minutes, 31 seconds; 3000-metre run, J. Zander, 8 minutes, 35.7 seconds; 4828-metre run (3 English miles), J. Zander, 14 minutes, 38.7 seconds; 5000-metre run, J. Zander, 14 minutes, 58.6 seconds; 400-metre low hurdles, T. Norling, Malmo, 57.4 seconds; running high jump, K. Kullerstrand, Eskilstuna, 1 metre, 89 centimetres; throwing the javelin, best hand, E. Lemming, Stockholm, 62 metres, 32 centimetres; throwing the javelin, both hands, Y. Hackner, Karlskoga, 114 metres, 28 centimetres; throwing the discus, both hands, O. Zallhagen, Stockholm, 83 metres, 46 centimetres; pole vault, C. Harleman, Falun, 3 metres, 90 centimetres.

Following the Swedish games an international meet with Sweden, Norway, and Denmark being represented was held at Christiania, Norway. The athletes from Sweden scored the largest number of points, 31, Norway finishing second with 22, and Denmark bringing up the rear with 13. In the eleven events contested Sweden captured eight first places as against Norway's three. Norway and Denmark both held national championships but no new records were made.

ATLANTA CONFLAGRATION. See FIRE PROTECTION.

ATOMIC WEIGHTS. See CHEMISTRY, GENERAL PROGRESS OF.

ATWOOD, ISAAC MORGAN. An American clergyman, educator, and author, died October 26, 1917, at Washington, D. C. He was born in Pembroke, N. Y., in 1837, was educated at Yale and ordained to the ministry of the Universalist Church in 1861. After holding several New York and New England pastorates he was appointed president of the Canton Theological Seminary in 1879. He was Superintendent of the Universalist Church in the United States and Canada in 1898-1906. Dr. Atwood was an Associate Editor of the *Encyclopædia Britannica* and in 1911 became professor of theology and philosophy at St. Lawrence University. He wrote several religious books.

AUSTEN, DAVID ELWELL. An American soldier, died July 16, 1917, at Mountain Lake N. J. He was born at Clifton, Staten Island, February 6, 1841, and was educated at the Swinburne Collegiate Institute at White Plains. He was for some years in the employ of oil companies but studied law, graduated from the New York University Law School, and was admitted to the bar. At the outbreak of the Civil War he enlisted in the Seventh Regiment, later won his commission in the Forty-seventh Regiment, became a Colonel at the age of twenty-seven and Commanding Officer of the Thirteenth Coast Defense Command in 1877 and again in 1888. In 1908 he was appointed head of the Coast Artillery with the rank of Brigadier General, and in 1911 he was retired from the New York National Guard with the rank of Major General. He was Receiver of Taxes for New York City for over twenty years and in 1912 was appointed Superintendent of Parks for Queens, holding that office only for a short time.

AUSTRALIA, COMMONWEALTH OF. A self-governing dominion of the United Kingdom, between the Pacific and Indian oceans. It consists of the island (or continent) of Australia, the Island of Tasmania, and adjacent small islands, and is divided into six States and two territories. The temporary seat of the Federal government is Melbourne, in the State of Victoria. The permanent capital will be Canberra, founded 1913, in the Federal Territory. The Federal Territory is within the State of New South Wales.

AREA AND POPULATION. The estimated area of the Commonwealth is 2,974,581 square miles. This area falls short of the gross area of Continental United States by only 52,208 square miles, or about the area of the State of North Carolina. Much of Australia is uninhabited, and a large part of the interior, especially in the west, is sandy and stony desert. The table below shows by States and territories the estimated area, together with the population according to the census of April 3, 1911, and the estimate of June 30, 1916:

	Square miles	*Population 1911*	*Population 1916*
New South Wales..	309,460	1,646,734	1,856,494
Victoria	87,884	1,315,551	1,405,977
Queensland	670,500	605,813	687,471
South Australia....	380,070	408,558	433,563
Western Australia..	975,920	282,114	314,687
Tasmania	26,215	191,211	197,497
Northern Territory.	523,620	3,310	4,846
Federal Territory..	912	1,714	2,472
Commonwealth.	2,974,581	4,455,005	4,903,007

Western Australia comprises about 32.8 per cent of the total Commonwealth area; Queensland, 22.5; Northern Territory, 17.6; South Australia, 12.8; New South Wales, 10.4; Victoria, 3.0; Tasmania, 0.9. The population figures in the table above are exclusive of full-blooded aboriginals. Such persons more or less civilized and in the employment or within the settlements of whites numbered 19,939 at the 1911 census. The total number of aborigines is not known; authorities believe that it was never large and that at present it does not exceed 100,000. The 1911 census returned 52,343 persons of non-European race, including: half-caste aborigines, 10,113; full-blood and half-caste Asiatics, 34,838 and 3852 respectively; Polynesians, 2524 and 227. Of the 1911 population, 3,667,670 were born in Australia, 590,722 in the United Kingdom, 73,949 in other European countries, 36,442 in Asia, 31,868 in New Zealand, 11,278 in America, and 3410 in Polynesia. The total population of the Commonwealth increased to 4,940,952, as estimated for the end of 1914; but a decline began with the departure of the expeditionary forces for the great war.

Estimated populations of the capital cities with suburbs were as follows at the end of 1915: Sydney, New South Wales, 763,000 (40.83 per cent of the total population of the State); Melbourne, Victoria, 684,000 (48.24 per cent); Brisbane, Queensland, 161,938 (23.80 per cent); Adelaide, South Australia, 209,450 (47.64 per cent); Perth, Western Australia, 106,792 (33.58 per cent); Hobart, Tasmania, 39,838 (19.82 per cent).

The birth rate for the Commonwealth per 1000 mean population in 1915 was 27.25 (27.16 in 1901); death rate, 10.66 (12.22); marriage rate, 9.14 (7.32). In 1914 and 1915 respectively, births numbered 137,983 and 134,871; deaths, 51,720 and 52,782; marriages, 43,311 and 45,224.

RELIGION AND EDUCATION. The following returns were made by the 1911 census: Christian persons, 4,274,414; non-Christian, 36,785; indefinite, 14,673; persons of no religion, 10,016; persons objecting to state their religious preference, 83,003; unspecified, 36,114. The principal Christian denominations were: Church of England, with 1,710,443 adherents; Roman Catholic Church, 921,425; Presbyterian, 558,336; Methodist, 547,806; Baptist, 97,074; Congregationalist, 74,046; Lutheran, 72,395; Church of Christ, 38,748.

Illiteracy is not common in Australia. At the 1911 census, persons of five years of age and upwards numbered 4,019,372; of these, 139,749 were not able to read, and 95,727 were not recorded in respect of literacy.

In 1915 there were 3480 government schools in New South Wales, with 7890 teachers and 265,446 pupils; and 718 private schools, with 3682 teachers and 78,619 pupils. Victoria had 2227 government schools, with 6085 teachers and 250,264 pupils; private schools, 509, with 1879 teachers and 52,638 pupils. Queensland had 1463 government schools, with 3828 teachers and an average attendance of 86,540; private schools, 147, with 748 teachers and an average attendance of 14,404. South Australia in 1914 had 839 government schools, with 60,729 pupils: private schools, about 170, with upwards of 11,000 pupils. Western Australia in 1915 had 622 government schools, with 45,956 pupils and an average attendance of 39,970; private schools, 124, with 10,972 pupils and an average attendance of 9532. In 1915 Tasmania had 455 public elementary schools, with 35,355 pupils, besides 16 superior schools, several high and technical schools, and about 90 private schools. There is a university at each of the six capital cities;—the teaching staff at Sydney in 1915 numbered 162 and the students 1798; at Melbourne there were 1315 students; at Adelaide, in 1913, 720 students (exclusive of 318 music students); at Brisbane, in 1915, 206 students; at Perth and Hobart respectively in 1913, 182 and 162 students.

AGRICULTURE. The final estimates for cereal crops in 1915-16 and the preliminary estimates for 1916-17 are as follows, in hectares and metric quintals:

	Hectares		*Metric Quintals*	
	1915-16	*1916-17*	*1915-16*	*1916-17*
Wheat ...	5,070,932	5,071,000	48,886,518	39,048,000
Rye	4,000	4,000	34,000	34,000
Barley ..	69,000	78,000	862,000	912,000
Oats	293,221	293,000	2,987,120	3,012,000
Corn	131,000	129,000	1,727,000	2,159,000

The percentage of area planted and of production in 1916-17 as compared with the five-year average in the period 1909-10 to 1913-14 was as follows: Wheat, 164.8 per cent for area and 158.5 per cent for production; rye, 111.8 and 126.2; barley, 116.9 and 138.7; oats, 97.2 and 119.8; corn, 90.2 and 84.3. The yield of wheat per hectare in 1916-17 was 7.7 quintals, and the average yield in 1909-10 to 1913-14 was 8.0 quintals; rye, 8.5 and 7.5; barley, 12.5 and 10.5; oats, 10.3 and 8.3; corn, 16.7 and 17.9.

The area under crop in Australia in 1914-15 was 15,651,974 acres, as compared with 14,683,012 in 1913-14 and 10,972,299 in 1909-10. These areas do not include lands under permanent artificially sown grasses, which amounted to 3,208,362 acres in 1913-14. The value of the agricultural production in 1914-15 was estimated at £36,052,396.

By far the most important crop is wheat. The yield fell from about 103,344,000 bushels in 1913-14 to about 24,892,000 bushels in 1914-15 and increased to about 179,620,000 bushels in 1915-16. In acres and bushels the area and production of wheat is shown below by States in 1913-14 and 1914-15:

	Acres		*Bushels*	
	1913-14	*1914-15*	*1913-14*	*1914-15*
N. S. W.*	3,205,897	2,758,024	38,020,881	12,830,530
Vic.	2,565,861	2,863,535	32,936,245	3,940,947
Qld. ...	182,655	127,015	1,769,432	1,585,087
S. A. ...	2,267,851	2,502,630	16,936,988	3,527,428
W. A. ...	1,097,193	1,876,012	13,331,850	2,624,190
Tas.	18,432	23,865	349,736	384,220
Cwlth.	9,287,898	9,651,081	103,344,132	24,892,402
1912-13	7,390,651	......	91,981,070	......
1911-12	7,427,834	......	71,636,347	......
1908-9	5,262,473	......	62,590,996	......
1901-2	5,115,965	......	38,561,619	......

* Including Federal Territory.

The production of oats and corn in bushels and of hay and sugar cane in tons, and the total area in acres of these crops, were as follows in 1913-14 and 1914-15:

	Area		*Production*	
	1913-14	*1914-15*	*1913-14*	*1914-15*
Oats	859,020	774,784	15,232,048	4,841,104
Corn	331,879	339,781	9,178,821	8,455,561
Hay	2,754,672	2,628,618	3,872,596	1,738,944
Cane	160,976	172,616	2,271,558	2,104,289

After wheat the most important crop is hay, of which a very large proportion is cereal grasses; in New South Wales, South Australia, and Western Australia the principal hay crop is wheaten and in Victoria oaten. Other crops are green forage, potatoes, grapes, fruit, and vegetables. Sugar cane is grown for sugar-making only in Queensland and New South Wales, and much more extensively in the former than in the latter.

Grazing. Australia has a leading place as a sheep raising country, but in recent years the number of sheep has declined. The estimated number of sheep in New South Wales June 30, 1916, was 32,583,000; cattle, 2,405,000; horses, 720,000; and swine, 280,000. Reported live stock in Victoria March 31, 1916: sheep, 10,545,632; cattle, 1,043,604; horses, 493,779; swine, 192,002. In Queensland the reported number of sheep in 1914 was 23,129,919 and in 1915, 15,950,154, the decrease being largely in consequence of the dry season; cattle, 5,455,943 and 4,780,893; horses, 743,059 and 686,871; swine, 166,638 and 117,787. Reported live stock in South Australia December 31, 1915: sheep, 3,674,547; cattle, 226,565; horses, 253,333; swine, 66,237. The reported number of sheep in Western Australia at the end of 1915 was 4,803,850; cattle, 821,048; horses, 163,006; swine, 58,231. A report for Tasmania March 1, 1916, places the number of sheep at 1,624,450; cattle, 169,575; horses, 41,422; swine, 37,778. Live stock as reported for the Northern Territory December 31, 1915: sheep, 57,827; cattle, 483,961; horses, 19,957; swine, 500. As reported for the Commonwealth, there was a total of 69,693,375 sheep and of 9,993,743 cattle at the end of 1915. Sheep in the several States have been as follows, in thousands:

	1911	*1912*	*1913*	*1914*
N. S. W......	44,723	38,856	39,701	32,874
Vic.	13,858	11,892	12,114	12,052
Qld.	20,741	20,310	21,787	23,130
S. A.	6,172	5,481	5,073	4,208
W. A.	5,412	4,597	4,421	4,456
Tas.	1,828	1,868	1,745	1,675
N. Ter.	51	76	67	70
F. Ter.	225	189	149	135
Cwlth.	93,004	83,264	85,057	78,600

Estimated wool production, stated as in the grease, in the year 1914-15, 641,786,519 pounds, as compared with 711,134,203 pounds in 1913-14 and 648,851,913 pounds in 1912-13. The share of New South Wales (including Federal Territory) in 1914-15 was 318,935,000 pounds; Queensland, 155,478,740 pounds in the calendar year 1914 and 130,783,277 pounds in 1915; Victoria, 95,406,867 pounds in 1914-15; South Australia, 38,848,978 pounds; Western Australia, 24,562,110 pounds; Tasmania, 8,154,824 pounds; Northern Territory, 400,000 pounds.

Mining. Mineral production in the Commonwealth (exclusive of building stone, slate, cement, etc.) was valued in 1915 at £22,396,782, including: gold, £8,270,339; coal, £4,277,592; copper, £3,935,890. Australia's total gold production up to the end of 1915 is reported at £572,487,653. The table below shows by States the value of important minerals produced in 1914, the total for all minerals produced in 1913 and 1914, and the grand total of mineral production from the beginning of mining to the end of 1914:

	Gold	*Coal*	*Sil. Ld.**	*Copper*
	£	£	£	£
N. S. W....	528,878	3,737,761	3,611,369	274,671
Vic.	1,755,286	289,099	1,540	......
Qld.	1,059,674	416,292	38,640	1,118,648
S. A.	26,581	......	529	417,487
W. A.	5,237,851	148,684	69,228	38,174
Tas.	111,475	27,858	96,225	496,041
N. Ter.	10,757	......	545	4,860
Cwlth. ...	8,729,947	4,610,689	3,818,076	2,349,881

	Tin	*Total* *1913*	*Total* *1914*	*Gd. Total*
	£	£	£	£
N. S. W..	267,130	11,649,089	10,085,088	249,034,514
Vic.	4,955	2,171,477	2,086,188	300,051,026
Qld.	176,197	3,857,881	2,976,280	110,735,634
S. A. ...	.....	632,519	590,616	31,649,764
W. A. ...	35,649	6,036,265	5,553,627	124,927,734
Tas.	259,300	1,415,700	1,067,088	39,152,517
N. Ter. ..	15,200	44,626	35,807	2,923,206
Cwlth.	758,431	25,807,557	22,264,589	858,394,395

* Silver and lead.

The Commonwealth is one of the leading gold-producing countries of the world. The principal output is in New South Wales, Victoria, and especially, in recent years, Western Australia. The largest total gold production was in 1903, when the output was valued at £16,294,684; since that year the annual output has steadily declined.

Commerce. During the first year of the great war the Australian foreign trade showed a marked decline in both imports and exports of merchandise; but in the year 1915-16 there was a fair recovery, although the exportation of many articles was prohibited or restricted to British dominions or countries of the Allies. The trade, including specie and bullion, is shown in the table below, which distinguishes total imports, domestic exports (that is, exports of Australian produce), and total exports. The figures for 1914 are for the first six months only; in that year the trade year was changed from the calendar year to the year ending June 30.

	Total Imports	*Exports* *Domestic*	*Exports* *Total*
	£	£	£
1905	38,346,781	54,127,758	56,841,035
1910	60,014,351	71,836,195	74,491,150
1911	66,967,488	76,205,210	79,482,258
1912	78,158,600	75,961,568	79,096,090
1913	79,749,658	75,138,147	78,571,769
1914 *	39,777,497	36,265,764	37,980,087
1914-15	64,481,837	58,122,578	60,592,576
1915-16	77,898,516	71,880,279	74,775,025

* First six months only.

Imports and exports of specie and bullion in 1912 amounted to £1,675,240 and £12,461,600 respectively; in 1913, £1,553,544 and £3,798,735; in 1914 (first six months), £866,033 and £1,612,277; in 1914-15, £868,056 and £2,907,666.

Leading imports in 1914-15 and 1915-16 respectively have been reported as follows, in thousands of pounds sterling: metal manufactures, 9433 and 9695; cotton and linen piece goods, 4268 and 5350; apparel, 3578 and 4048 (exclusive of hats and caps, 412 and 417; and boots and shoes, 624 and 381); drugs, chemicals, and fertilizers, 2426 and 3001; woolens, 1850 and 2889; machines and machinery, 3501 and 2851; oils in bulk, 1893 and 2454; silk piece goods, 2082 and 2396; bags and sacks, 1552 and 1983; paper, 1739 and 1994; tea, 1529 and 1940; timber, 2150 and 1719; spirits, 1291 and 1149; tobacco, 902 and 969.

Principal exports in 1914-15 and 1915-16, in thousands of pounds sterling: wool, 22,088 and 26,854; gold specie, 1941 and 9517; gold bullion, 480 and 841; gold in matte, 204 and 197; wheat, 859 and 7998; copper matte, ingots, bars, and ore, 2303 and 3591; lead, pig and in matte, 2009 and 3194; skins and hides, 3522 and 2429; beef, 4990 and 2176; flour, 509 and 1739; zinc concentrates, 613 and 1307; leather, 1183 and 1137; butter, 2687 and 1118; mutton and lamb, 3414 and 770; rabbits and hares, 532 and 725; tin ingots, 226 and 577; tin ore, 187 and 244; coal, 721 and 508; tinned meat, 1854 and 501; tallow, 1571 and 444; silver bullion, 433 and 367; silver in matte and silver ore, 322 and 339.

Trade with the more important countries, in thousands of pounds sterling:

	Imports		*Exports*	
	1914-15	*1915-16*	*1914-15*	*1915-16*
United Kingdom ..	37,897	39,715	38,546	33,524
United States.....	9,586	15,861	4,947	17,647
British India	2,748	3,680	1,425	1,746
Japan	1,392	2,906	1,967	3,488
New Zealand......	2,096	2,841	2,809	3,651
Java	738	1,498	384	505
Ceylon	977	1,256	485	387
Union of So. Africa	117	685	2,028	1,679
France	238	306	1,280	2,469
Germany	1,297	41	478	.....
Belgium	524	7	805	.....
Russia	28	2	270	900

In the direct foreign trade, imports to and exports from the several States were as follows in 1915-16: New South Wales, £33,379,698 and £40,972,824; Victoria, £26,654,080 and £14,728,401; Queensland, £7,000,912 and £8,106,123; South Australia, £5,150,710 and £6,136,085; Western Australia, £4,168,443 and £4,198,520; Tasmania, £982,849 and £612,119; Northern Territory, £61,824 and £20,953; total £77,398,516 and £74,775,025.

SHIPPING. The number of vessels, with cargo and in ballast, and the net tonnage entered and cleared, in the foreign trade have been as follows:

	Entered		*Cleared*	
	Vessels	*Tons*	*Vessels*	*Tons*
1906	....	4,006,145	....	3,960,518
1911	2,081	4,998,220	2,093	4,991,581
1912	2,035	5,168,857	2,017	5,111,957
1913	2,014	5,371,531	1,971	5,230,417
1914-15	1,568	4,174,955	1,643	4,424,303
1915-16	1,654	4,269,484	1,670	4,268,838

Vessels entered according to nationality, in 1915-16: British, 691, of 2,661,946 tons; Australian, 337, of 552,782 tons; New Zealand, 167, of 261,783 tons; American, 177, of 198,902 tons; French, 57, of 89,160 tons; Norwegian, 51, of 81,945 tons.

Australian merchant marine in 1915: steamers, 1166, of 324,776 tons net; sail, 1337, of 52,398 tons net; total, 2503 vessels, of 377,174 tons net.

COMMUNICATIONS. The reported length of Australian railway in 1915 open to public traffic was 21,205 miles, including private railways totaling 1143 miles. In addition, there were private railways not open to general traffic aggregating 1058 miles; so that the total mileage in operation was 22,263. The table below shows the length and the cost of construction and equipment of Commonwealth and State lines up to June 30, 1915, and their gross receipts and working expenses for the year then ended:

	Miles	*Cost*	*Receipts*	*Expenses*
Cwlth. ..	1,193	£6,087,484	£229,585	£285,553
N. S. W.	4,134	64,008,486	7,616,511	5,311,162
Vic.	3,875	51,518,792	5,161,078	4,288,411
Qld.	4,838	33,405,877	3,332,008	2,401,679
S. A. ...	2,157	16,597,139	1,745,378	1,448,495
W. A. ..	3,332	16,980,712	2,058,244	1,497,820
Tas.	533	4,628,911	323,265	225,995
Total..	20,062	£193,227,301	£20,966,059	£15,409,121

The 1193 miles of Commonwealth line given in the foregoing table include: Kalgoorlie-Port Augusta line, 564 miles, the portion constructed up to June 30, 1915; Port Augusta-Oodnadatta line, 478 miles; Palmerston-Pine Creek line (in the Northern Territory), 146 miles; Canberra, 5 miles. The Port Augusta-Oodnadatta line and the Palmerston-Pine Creek line are the southern and northern sections respectively of the projected north-and-south transcontinental railway. This establishes rail communication from Longreach via Rockhampton, Maryborough, Gympie, and Brisbane, in Queensland, via Tamworth, Newcastle, Sydney, Goulburn, and Wagga Wagga, in New South Wales, via Melbourne and Ballarat, in Victoria, via Adelaide and Port Augusta, in South Australia, via Kalgoorlie, Coolgardie, and Perth to the seaport of Fremantle, in Western Australia.

In Australia new railway legislation was rendered necessary by the completion of the East-West Transcontinental line. The Commonwealth then had three important lines—the East-West Transcontinental, with a length of 1053 miles; the Port Augusta to Oodnadatta, 478 miles; and the Darwin to Katherine River, 200 miles. Hitherto these lines had been operated in three different ways and a Commonwealth Railway Bill was introduced to bring them under uniform control. The measure provided for non-political control by a Commissioner, presumably Mr. N. G. Bell, the acting Commissioner—who was to be appointed for five years at a salary not greater than £2000 a year. In commenting on the proposals, the Melbourne *Age* said that the most important feature was the provision which did away with the pernicious system of political control.

The completion of the Australian Transcontinental Railway was marked by the running of the first train on October 20, 1917. This connecting link extends a distance of 1053 miles from Kalgoorlie in Western Australia to Port Augusta in Southern Australia. It was an important feature in the development of the Commonwealth idea in 1900, and was insisted upon by the State of Western Australia, which had considered itself cut off from the more populous cities in the east. The preliminary survey for this railroad was made in 1909 and the first sod of the eastern end was turned in 1912, and that of the western end in February, 1913. At least 800 miles of the route were entirely uninhabited, and great water difficulties were experienced. Throughout the whole distance there was no surface water, so that an important part of the undertaking was the construction of reservoirs, which were placed at intervals along the line. The original estimate made in 1911 was £4,045,000, but this amount was greatly exceeded and before ultimate completion would probably be increased to £7,000,000. The line was constructed for high speed and heavy rolling stock, so that eventually the trip from Port Augusta to Kalgoorlie could be made in 24 hours, although it was not contemplated at the outset to make the journey in less than 25 hours. The new railway was of standard gauge, 4 feet 8½ inches, so that it was impossible to run through trains from Perth on the coast of Western Australia and Adelaide and Melbourne in South Australia and Victoria, where the gauge of 3 feet 6 inches was used. The locomotives and rolling stock introduced in this line afforded a most modern type and represented the best practice in railway construction.

In Australia as elsewhere increased expenses were being felt by the State railways and on the recommendation of P. R. Johnson, an English railway expert, who had been investigating the causes of the unfavorable financial condition, increased freight rates and passenger fares were adopted.

FINANCE. Commonwealth revenue and expenditure are reported as follows for fiscal years ending June 30:

	1913-14	*1914-15*	*1915-16*
Revenue	£	£	£
Customs	12,652,736	12,105,698	18,621,471
Excise	2,325,333	2,771,556	8,328,470
Posts, telegraphs, and telephones	4,510,917	4,594,542	5,055,183
Land tax	1,609,945	1,953,696	2,040,176
Probate and succession duties	......	89,646	625,990
Income tax	......	......	3,933,471
Other	641,492	954,660	2,028,182
Total	21,740,428	22,419,798	30,627,943
Loans	......	16,529,320	60,424,689
Total receipts	21,740,428	38,949,118	91,052,632
Expenditure	£	£	£
War and marine	4,752,735	19,536,886	46,107,439
Posts, telegraphs, and telephones	6,282,994	6,053,102	5,983,780
Old-age pensions	2,579,265	2,731,940	2,859,766
Maternity allowances	674,990	694,675	659,715
Other	2,588,344	2,734,935	3,302,740
Total	16,878,328	31,751,488	58,913,440
Subsidies to States	6,282,999	6,363,775	6,346,995
Total disbursements	23,161,327	38,115,263	65,260,435

The first portion of the debt of the Commonwealth government was contracted at the beginning of 1911, when it assumed responsibility, from South Australia, for the outstanding liabilities of the Northern Territory and the Port Augusta-Oodnadatta Railway. As reported for March 1, 1916, the total Commonwealth debt, including properties transferred from States and war loans incurred, was as follows: Commonwealth inscribed stock (3½ per cent), £4,580,000; Commonwealth inscribed stock and bonds (4½ per cent war loan), £35,045,020; war loan from British Government, £29,978,416; Commonwealth treasury bills, £4,290,719; South Australia debt transferred, £4,690,034 (on account of the Northern Territory, £2,778,266; on account of the Port Augusta-Oodnadatta Railway, £1,911,768); total, £89,361,350.

The table below shows State revenue and expenditure, exclusive of loans and expenditure therefrom, in thousands of pounds sterling:

	Revenue		*Expenditure*	
	1914-15	*1915-16*	*1914-15*	*1915-16*
N. S. W.	18,928	19,629	17,928	18,982
Vic.	10,529	11,170	11,707	11,403
Qld.	7,208	7,706	7,199	7,672
S. A.*	3,973	4,761	4,662	4,752
W. A.	5,141	5,357	5,707	5,705
Tas.	1,244	1,376	1,384	1,341

* Figures for 1915-16 are estimates.

Public debts of the States June 30, 1916: New South Wales, £130,514,018; Victoria, £72,183,927; Queensland, £58,261,136; South Australia, £37,743,289; Western Australia, £39,139,676; Tasmania, £13,908,913. See PRICES.

NAVY. The royal Australian navy, under control of the British Admiralty in time of war, includes the following vessels:—battlecruiser, *Australia* (19,200 tons); light cruisers: *Encounter* (5880 tons), *Melbourne* (5600 tons), *Pioneer* (2200 tons), *Sydney* (5600 tons), *Brisbane* (5600 tons); torpedo boat destroyers: *Derwent, Torrens, Swan,* and *Parramatta*, each of 700 tons; and several gunboats, torpedo boats, etc.

GOVERNMENT. The Commonwealth of Australia is a federal state within the British Empire. The legislative power is exercised by a parliament of two chambers, the Senate and the House of Representatives. Senators, 36 in number (6 from each State), are elected for six years; representatives, 75 in number, for three years—all by universal adult (male and female) suffrage. On the basis of the 1911 census, New South Wales has 27 representatives; Victoria, 21; Queensland, 10; South Australia, 7; Western Australia and Tasmania, each 5. No State may have less than 5 representatives. The executive authority is vested in the British sovereign acting through a governor-general, whom the sovereign appoints and who is assisted by a responsible ministry, the executive council. The governor-general in 1917 was Sir Ronald Craufurd Munro-Ferguson, G.C.M.G. The ministry formed February 15, 1917, was as follows: prime minister and attorney-general, William Morris Hughes; minister for home affairs, P. McM. Glynn; defense, George Foster Pearce; trade and customs, Jens August Jensen; navy, J. Cook; postmaster-general, W. Webster; treasurer, Sir J. Forrest, G.C.M.G.; public works and railways, W. A. Watt; assistant attorney-general, L. E. Groom; vice-president of the executive council, E. D. Millen; honorary minister, Edward John Russell.

Each of the six Australian States has a parliament of two chambers elected, like the federal parliament, by universal adult suffrage. The State parliaments have legislative power in respect of matters not transferred by the constitution to the federal parliament. Each State is administered by a governor, who is appointed by the crown and is assisted by a responsible ministry.

HISTORY

THE ELECTIONS. Since November, 1916, when the government's conscription bill was defeated at the polls there had been a bitter political conflict. The Prime Minister of the Commonwealth, Mr. William M. Hughes, driven from the leadership of the Federal Labor party, placed himself at the head of the movement for conscription. A meeting was held at Melbourne early in January of leading men in politics and business who decided upon a new organization which should be a national party and make the winning of the war the dominant issue, to which everything else should be subordinate. Its other objects were the development of Australian national life; the maintenance of imperial solidarity; the insistence upon a Commonwealth parliament which should fully represent the nation in these respects; and the subordination of party issues to these central purposes. On February 19 the Prime Minister resigned but was immediately requested by the governor-general to form a new coalition cabinet. This he did, giving to Mr. J. Cook, the leader of the opposition, the portfolio of Minister of the Navy. The title of the new ministry was to be the Commonwealth War Government. The political conditions in Australia were so difficult that the Prime Minister was unable to attend the imperial conference at London where, accordingly, Australia was not represented. As the elections approached it seemed certain that the Labor party would be overthrown, for everywhere it had been losing ground. This expectation was fully realized. The election which was held in May turned mainly on the issue of the "Winning the War" policy and the rout of the Labor party was complete. They were partially defeated even in their stronghold, Queensland, where the Labor government's referendum on the abolition of the upper house of the State parliament was defeated by a large majority. The Government gained a complete victory in the lower House, and in the Senate the Labor party lost every seat. It was described as the most complete defeat ever inflicted upon a political party since the creation of the Commonwealth. In spite of its defeat the Labor party, which was compactly organized under a few leaders of extreme views, continued in its policy of opposition. In July the Victoria State Labor Conference passed by a vote of 112 to 52 a resolution for the abolition of compulsory military training, and the Melbourne Trades Hall Council on July 19, voted that Labor members of Parliament should refuse to assist in recruiting.

SOLDIERS' SETTLEMENT. There was much discussion of plans for the settlement of soldiers in Australia after the war. It was argued that Australia was by the necessity of her situation an exporter of food and an importer of men; that she needed an independent population on the soil. She would be under the necessity of resettling all the soldiers who had gone over-seas to fight. Since, under the present constitution, all the lands are the property of the individual States these States must be concerned in any scheme for land settlement. A conference of the various governments of the Commonwealth was held in January and a scheme was formulated. The principal feature of this was that the British and Australian soldiers were to have equal treatment. A government board entitled the Soldiers' Settlement Board was appointed, consisting of a minister from each State and a minister representing the Commonwealth. The recommendations made by this board were as follows:—1st. Financial aid to be advanced to the soldier settlers. 2nd. The working out by the board of the purposes for which these advances were to be made and the conditions under which that rate was to be paid. The money was to come from the Commonwealth government but was to be advanced through existing State institutions, such as agricultural banks, etc. The plan was to make these advances at very reasonable rates. The Commonwealth, moreover, was to provide the money to enable the settler to begin his occupancy of the land. Already in February, 1917, the respective governments had acquired large areas of land.

WOMAN'S WORK. In the beginning of 1917 the employment of the women had greatly increased. No new industries were created for them, but they replaced men in callings that were suited to them. In the factories there was no especial increase in the number. Nor was their number increased very much outside the cities. They were employed frequently as clerks in shops and even in the banks. It was estimated that two-thirds of the places held by the 300,000 men who were called to the colors were filled by women.

STRIKES. In August strikes occurred among the employees of the railway shops of Sydney, on the ostensible ground that the card system employed by the Railways Commissioners was unfair to the men. In consequence, many unions in New South Wales as well as in the other States went out on sympathetic strike, causing an almost complete stoppage of shipping. The government resorted to volunteers, and thousands of men left work refusing to touch any material into which volunteer labor had entered. The strike turned out, however, to be a complete failure and after a few weeks' idleness the men returned to work, so that by the end of September there seemed a prospect of prolonged industrial peace. On July 30 the wharf laborers of Victoria went on strike. Allied Trades followed their example, and the strike spread to other States. In August the shipping industry was seriously impeded and Newcastle in New South Wales suffered a falling off in its coal supplies. As a result of the strike many were thrown out of work.

INDUSTRIAL REORGANIZATION. As to the future policy of Australia, especially in the matter of organizing trade with the empire, Mr. Hughes at the end of October outlined the measures required. Pointing to the great results achieved by organization in Great Britain he declared that the same methods must be imitated in Australia. The country was now receiving from Great Britain tens of millions of pounds for the purchase of products not yet delivered. The inflation that resulted from this would suddenly collapse at the close of the war. A plan must be devised to meet this danger. Hitherto the country had concerned itself only with individuals and not with industry as a whole. Germany had taken the other course and henceforth this would be necessary for Australia, because production was a national function, and therefore should proceed along business lines aided by the best scientific knowledge, supported financially and backed by the entire community. Thereupon he briefly outlined a plan which consisted in—1st, an association representing each industry; 2nd, a general council of commerce consisting of representatives of each of these associations; 3rd, a department of trade; 4th, a science bureau; 5th, trade representation for the chief over-sea markets. The association should supervise the cost of production and give information in regard to markets, thus aiding the individual to produce at the lowest cost and to find the best market. The banks could take a hand in developing industries because they could loan more widely, the credit of the Commonwealth being behind the enterprise. The science bureau ought to be associated with the most important technical schools, universities, and colleges.

CONSCRIPTION REFERENDUM CAMPAIGN. It was evident to many that the voluntary system in Australia was a failure and finally on October 31 it was announced that the cabinet would soon consider a change of policy. At that time 380,000 soldiers had been sent over-seas. On November 8 the Federal cabinet unexpectedly announced that a second referendum would be held on the subject of conscription. In general the press supported it enthusiastically, but there was a good deal of uncertainty as Queensland was opposed to it and as it was doubtful whether it could be carried in New South Wales. It was thought that the result would be determined largely by the women's vote. The date for the vote on it was fixed for December 20. The vote as counted down to December 30 was 1,121,000 against and 945,000 for conscription.

It was announced on December 6 that the Commonwealth government had introduced a war loan bill for £80,000,000 of which £20,000,000 was to be floated in Australia at once. The loan was to bear interest at 4½ per cent, to be exempt from income tax, and to be payable in ten years.

AUSTRIA-HUNGARY, or the AUSTRO-HUNGARIAN MONARCHY. A central European monarchy, consisting of the Austrian Empire, the Hungarian Kingdom, and the territory of Bosnia and the Herzegovina. The common terms "Austro-Hungarian Empire" and "Empire of Austria-Hungary" are misnomers. Vienna is the capital of Austria and the permanent residence of the sovereign; Budapest is the capital of Hungary. In these cities the examining and advisory body known as the Delegations, acting for Austria and for Hungary in respect of their common affairs, convenes alternately.

AREA AND POPULATION. The Austro-Hungarian monarchy has an area of 261,241 square miles, which is somewhat smaller than the combined extent of Nebraska, Kansas, and Colorado. The Austrian Empire embraces 115,832 square miles, or about twice the area of Michigan. The Hungarian Kingdom covers 125,641 square miles, an area a little larger than Iowa and Missouri. The Austrian Empire consists of seventeen crownlands, as follows: Bohemia (q.v.), the Bukowina (q.v.), Carinthia (q.v.), Carniola (q.v.), Dalmatia (q.v.), Galicia (q.v.), Görz and Gradisca (q.v.), Istria (q.v.), Lower Austria, Moravia, Salzburg, Silesia, Styria, Tirol (q.v.), Trieste, Upper Austria, and Vorarlberg. The Hungarian Kingdom consists of Hungary proper and of Croatia and Slavonia (q.v.). Transylvania (q.v.) is sometimes not regarded as a part of Hungary proper, as so much of its population is non-Magyar. The population of the monarchy in 1916 was probably in excess of 52,500,000. The table below shows the area and the population according to the census of December 31, 1900, and the last census, that of December 31, 1910. The figures for Bosnia and the Herzegovina (q.v.) are returns of the census of April 22, 1895, and the census of October 10, 1910. Bosnia and the Herzegovina, formerly Ottoman provinces, were not annexed to Austria-Hungary until October 5, 1908; hence, the population of the monarchy as constituted in 1900 was 45,405,267.

	Square miles	*Population*	
		1900	*1910*
Austrian Empire	115,832	26,150,708	28,571,934
Hungary	109,216	16,838,255	18,264,533
Croatia and Slavonia	16,425	2,416,304	2,621,954
Hungarian Kingdom	125,641	19,254,559	20,886,487
Austria and Hungary	241,478	45,405,267	49,458,421
Bosnia and the Herzegovina	19,768	*1,591,036	†1,931,802
Monarchy	261,241	46,996,303	51,390,223

* Census of April 22, 1895.
† Census of October 10, 1910.

Austria-Hungary is one of the most remarkable countries in the world in respect of ethnical composition. Diversity of race and language and the corresponding national aspirations of the peoples have always been elements of insecurity in the coalition of the monarchy. The dominant race in Austria is German-speaking, and in Hungary Magyar-speaking, but the German- and Magyar-speaking elements combined form only about 44 per cent of the total population. It is these two elements that have given willing support to Germany in the great war. Doubtless under the menace of foreign invasions some of the other elements have shown more or less adhesion to the monarchy as a whole, but in general it is only the two elements mentioned that have been regarded as real enemies of the Entente. Below is shown the population as returned by the 1910 census according to vernacular (the figures for the monarchy are exclusive of the military in Bosnia and the Herzegovina, numbering 33,758):

	Austria		*Hungary Proper*	
	No.	*Per cent*	*No.*	*Per cent*
German	9,950,266	35.58	1,908,357	10.40
Magyar	10,974	0.04	9,944,627	54.50
Bohemian, Moravian, Slovak	6,435,983	23.02	......	....
Slovak	......	....	1,946,357	10.70
Polish	4,967,984	17.77	......	....
Ruthenian	3,518,854	12.58	464,270	2.50
Serbian and Croatian	783,334	2.80	656,324	3.60
Rumanian	275,150	0.98	2,948,186	16.10
Slovene	1,252,940	4.48	......	....
Italian and Ladin	768,422	2.75	......	....
Other	* 608,062	....	401,412	2.20
Total	28,571,934	100.00	18,264,533	100.00

	Croatia and Slavonia		*Monarchy*	
	No.	*Per cent*	*No.*	*Per cent*
German	184,078	5.10	12,010,669	28.39
Magyar	105,948	4.10	10,067,992	19.60
Bohemian, Moravian, Slovak..	......	....	8,475,292	16.50
Slovak	21,618	0.80	......	....
Polish	......	....	5,019,496	9.77
Ruthenian	8,807	0.30	3,998,872	7.79
Serbian and Croatian	2,283,809	87.10	5,545,581	10.79
Rumanian	846	....	3,224,755	6.28
Slovene	......	....	1,349,222	2.63
Italian and Ladin	......	....	804,271	1.57
Other	67,358	....	860,365	1.68
Total	2,621,954	100.00	51,356,465	100.00

* Including foreigners, of whom about 300,000 Magyars.

The civil population of Bosnia and the Herzegovina is included in the foregoing table under "Monarchy." The principal linguistic element in this population is Croatian and Serbian, being represented by 1,822,564 persons.

Austria-Hungary is an overwhelmingly Catholic country. The following table shows, according to the 1910 census, the number of Roman Catholics, Greek and Armenian Catholics, Evangelicals, adherents of the Eastern or Orthodox Church, Jews, and Moslems (exclusive of the military in Bosnia and Herzegovina):

	Austria	*Hungary*	*Bos.-Herz.*	*Monarchy*
R. Cath..	22,530,169	10,888,138	434,061	33,852,368
Gr. & Ar.	3,419,458	2,025,425	8,186	5,453,102
Evangel..	588,686	3,961,472	6,342	4,556,500
Orthodox.	667,065	2,987,163	825,418	4,479,646
Jews ...	1,313,687	932,458	11,868	2,258,013
Moslems.	1,446	......	612,137	613,583
Others ..	51,428	91,748	82	143,258
Total.	28,571,934	20,886,487	1,898,044	51,356,465

Males numbered in 1910, 25,407,965 and females 25,982,258. In Austria, there were 14,034,022 males and 14,537,912 females; in Hungary, 10,345,333 and 10,541,154; in Bosnia and the Herzegovina, 1,028,610 and 903,192.

In Austria, there were in 1913 195,524 marriages, 863,690 living births, and 588,654 deaths (exclusive of stillbirths); in Hungary, 195,030, 735,626, and 500,875.

The larger communal populations in Austria according to the 1910 census were: Vienna, 2,031,498; Prague, 223,741; Lemberg, 206,113; Trieste, 160,993; Cracow, 154,141; Graz, 151,781. In Hungary, the larger communal populations (and in parenthesis the city populations) were: Budapest, 880,371 (710,172); Szeged, 118,328 (77,797); Szabadka, 94,610 (48,140); Debreczen, 92,729 (54,325); Zágráb, 79,038; Pozsony, 78,223 (67,977); Temesvár, 72,555 (70,637).

Education. Elementary instruction, in both Austria and Hungary, is free and compulsory. Children are taught in the language or languages predominating in their communities. Statistics of elementary education in Austria are not available later than for the year 1912. In that year there were 23,247 elementary schools, with 107,374 teachers and 4,471,393 pupils; children of school age numbered 4,947,724.

Secondary education in Austria is provided chiefly by the gymnasia and realschulen. These have been reported as follows:

	Gymnasia		*Realschulen*	
	No.	*Students*	*No.*	*Students*
1912-13	348	108,838	148	49,151
1913-14	370	111,861	148	48,892
1914-15	372	111,640	148	47,755
1915-16	376	84,907	148	44,220

The number of gymnasia given above included 32 for girls in 1912-13, with 4797 students; in 1913-14, 40, with 5871 students; in 1914-15, 40, with 5997 students; in 1915-16, 41, with 4818 students. German was the language used in 146 of the gymnasia in 1915-16; Polish, 107; Bohemian, 73; Ruthenian, 16; Italian, 9; Serbo-Croatian, 7; Slovene, 2; in 16, two languages. Besides the 41 gymnasia for girls there were in 1915-16 75 lyceums for girls, with 10,528 students.

Austria has seven government technical high schools. Statistics of these schools and of the Vienna agricultural high school are shown below for the winter semester of 1915-16, as compared with the winter semester of 1913-14:

		Teachers	*Students*	
		1913-14	*1913-14*	*1915-16*
Vienna	....	183	3,177	639
Prague	German..........	86	900	146
	Bohemian........	151	2,817	848
Lemberg	....	98	1,791	167
Brünn	German	102	924	115
	Bohemian	73	569	133
Graz	....	54	814	80
Vienna agr. high school...		86	1,135	186
Total	....	833	12,127	2,314

In Austria, eight universities are maintained by the government. The number of students in the winter semester of 1911-12 was 29,417, and in the summer semester of 1912 26,556. As may be seen in the table above, the great war caused an enormous decline in the number of students at the technical high schools. The same is true of the university attendance; the following figures indicate the number of university students in the summer semester of 1912 and the summer semester of 1916: Vienna (German), 8780 and 3472; Prague (German), 1781 and 638; Prague (Bohemian), 4089 and 1891; Lemberg (Polish), 5062 and 1174; Graz (German), 1882 and 647; Innsbruck (German), 1264 and 584; Czernowitz (German), 1162 and 188; Cracow (Polish), 2536 and 1281; total, 26,556 and 9875. Educational statistics later than those given in the 1916 Year Book are not available for Hungary.

Agriculture. On account of the great war, the publication of agricultural statistics has been discontinued, and very little information is available later than for the year 1914. In respect of vegetable foodstuffs, the monarchy is approximately self-supporting. Thus, in 1913, while the importation of grain, pulse, flour, etc., was valued at 133,951,000 kronen, the exportation of these articles amounted to 115,172,000 kronen. But although virtually able to supply her own food needs in peace times, Austria-Hungary has failed to do so in war. The immense drain on her man power, invasion, and the general disorganization of economic conditions have brought about a situation in which many of her people have suffered a grievous lack of food. Some idea of agricultural production is afforded by the following figures, which represent, in metric quintals, the average annual yield in Austria and Hungary respectively: wheat, about 16,072,000 and 46,072,000; rye, 26,763,000 and 12,759,000; corn, 3,988,000 and 45,330,000; barley, 16,322,000 and 15,070,000; sugar beets, 63,871,000 and 30,353,000; potatoes, 132,848,000 and 52,864,000; tobacco, 66,950 and 676,350.

Mining and Metals. For Austria the latest available definite information concerning the production of minerals and metals are for 1913; this was published in the 1915 and 1916 volumes of the Year Book. The total value of Austrian mining products (exclusive of salt, petroleum, etc., was 371,442,426 kronen in 1913, and of furnace products 181,607,752 kronen.

In Hungary, the value of mining and furnace products in 1913 was 185,657,000 kronen. The reported steel production in 1915 amounted to 688,267 metric tons, as compared with 623,468 in 1914. Some of the more important mineral and furnace products were valued as follows in 1913 and 1914 respectively: lignite, 88,257,000 and 81,715,000 kronen; pig iron, 53,956,000 and 40,254,000; coal, 14,394,000 and 13,448,000; gold, 9,586,000 and 8,804,000; iron ore for export, 5,816,000 and 4,228,000; silver, 820,000 and 830,000.

Commerce. In the special trade of the common customs territory, imports in 1913 were valued at 3,406,592,000 kronen, and exports at 2,769,688,000 kronen. Details of this commerce were given in the 1915 Year Book. The 1914 trade was valued at about 2,754,000,000 kronen for imports and 2,015,900,000 for exports. The great war has all but ruined Austria-Hungary's foreign trade except with her allies. No approximate information as to the volume or details of this commerce is now available. There remains a fairly large commerce forced upon Rumania; if peace with Russia, which at the end of 1917 seemed not improbable, be established, active commercial relations will be resumed with that country. A rough idea of the decline of the monarchy's foreign trade may be obtained by noting the figures for Austria-Hungary in the commerce paragraphs of the articles on various countries in this book.

Shipping. In 1914, there were entered at Austrian seaports 132,365 vessels, of 19,350,194 tons (173,511, of 27,877,722 tons, in 1913); and cleared 132,000 vessels, of 19,071,589 tons (173,377, of 27,857,112 tons, in 1913). Of the 1914 tonnage about 92 per cent was Austro-Hungarian, Italian ranking second and Greek third. Entered at Hungarian seaports in 1913, 31,857 vessels, of 4,930,905 tons; cleared, 31,836, of 4,924,734 tons. Trieste, in Austria, and Fiume, in Hungary, are the principal merchant seaports. The chief Austro-Hungarian naval base is Pola. See Istria.

Communications. The Danube River and its affluents are important avenues of transportation. In 1913, canals and rivers navigable for steamers aggregated 3151 miles, of which 974 miles in Austria and 2177 miles in Hungary. At the beginning of 1914, the length of railway in operation was 29,328 miles, of which 14,781 miles in Austria, 13,589 miles in Hungary, and 958 miles in Bosnia and the Herzegovina. Railway open to traffic in Hungary in 1915 is reported at 13,671 miles.

Telegraph lines in Austria in 1915, 30,226 miles, with 160,725 miles of wire; telegraph lines in Hungary in 1914, 16,740 miles, with 103,540 miles of wire; telegraph lines in Bosnia and the Herzegovina in 1914, 2202 miles, with 6625 miles of wire. Post offices: in Austria in 1915, 10,126; in Hungary in 1914, 6774; in Bosnia and the Herzegovina in 1914, 249.

Finance. The legal standard of value is gold. The monetary unit is the krone (crown). Its par value is 20.263 cents; its actual value in 1917 was much less. A circular of the U. S. Director of the Mint dated October 1, 1917, stated that there were no market quotations for the krone, but that it had greatly depreciated. The cost of administering the common affairs of the monarchy is borne by Austria and by Hungary in a proportion agreed to by their parliaments and sanctioned by the emperor-king. The agreement renewed for ten years in 1907 provides that the net proceeds of the common customs be applied to the common expenditure, and that the remaining expenditure be satisfied in the proportion of 63.6 per cent for Austria and 36.4 per cent for Hungary. The budget, as reported for the fiscal year 1915, balanced at 790,578,808 kronen.

In Austria, the budget for the fiscal year 1915 showed estimated revenue and expenditure of 3,460,987,902 and 3,460,726,156 kronen respectively. In Hungary, estimated revenue and expenditure for the fiscal year 1915 were 2,264,157,883 and 2,264,096,830 kronen respectively. In Bosnia and Herzegovina, the provisional budget for the fiscal year 1917 showed estimated revenue of 118,596,602 kronen and estimated expenditure of 118,573,512 kronen.

According to the terms under which the union of Austria and Hungary was effected in 1867, no debts are contracted by the common government. The total general debt, contracted before the union, amounted on January 1, 1915, to 5,124,820,435 kronen. The debt of Austria increased from 7,467,346,388 kronen on January 1, 1914, to 12,836,044,942 kronen on January 1, 1915; and it has been reported that the Austrian on July 1, 1916, reached a total of 36,027,834,685 kronen, of which 24,552,502,438 kronen were war debt. The debt of Hungary, including arrears and outstanding paper, amounted in 1912 to 6,592,846,069 kronen, of which about 5,329,460,000 kronen were the funded debt. This debt, like the Austrian debt, has increased enormously during the great war,

Government. Under the constitutional compromise of 1867, whereby the Austrian Empire and the Hungarian Kingdom were united to form the Austro-Hungarian Monarchy, the administration of the monarchy is directed by the emperor-king, acting through three ministers, whom he appoints, for foreign affairs, finance, and war. The "emperor-king" is emperor of Austria and king of Hungary. The three common ministers are responsible to the two Delegations; these bodies, consisting of 60 members each, are chosen annually from the Austrian and Hungarian parliaments respectively and convene each year, alternately at Vienna and Budapest. They have no legislative function, but examine the requirements of the common services of the monarchy and advise the two parliaments as to needed legislation. The common government deals with finance relating to the monarchy as a whole, foreign affairs, the diplomatic, consular, postal, and telegraphic services, certain state monopolies, and military and naval affairs. It is only the active army that is under the common administration; the Landwehr and Landsturm are under the control of an Austrian and a Hungarian ministry of war. The navy constitutes a department of the common ministry of war. Austria and Hungary have each a representative parliament of two chambers and a responsible ministry. The Austrian parliament is termed the Reichsrat, and the Hungarian the Országgyülés. The lower house of the Reichsrat consists of 516 members, elected for six years; the lower house of the Országgyülés, 453 members, elected for five years. Each of the Austrian crownlands has a unicameral diet, and there is also a unicameral diet for Croatia and Slavonia. The administration of Bosnia and the Herzegovina is directed by the common ministry of finance.

The sovereign in 1917 was Charles (Emperor Charles I of Austria and King Charles IV of Hungary), who succeeded his great-uncle, Francis-Joseph, upon the latter's death November 21, 1916. The emperor-king was born August 17, 1887, and on October 21, 1911, married Zita, princess of Bourbon and Parma, who was born May 9, 1892. Heir-apparent, Archduke Francis Joseph Otto, born November 20, 1912.

The common ministry in 1917: premier and minister for foreign affairs: Ottokar (Count) Czernin, appointed December 22, 1916, in succession to Stephan (Baron) Burián von Rajescz, who became minister of finance; minister of war. Field Marshal Rudolf Stöger-Steiner von Steinstätten, appointed April 13, 1917. Premier of the Austrian ministry, Heinrich (Count) Clam-Martinitz, appointed December 3, 1916; premier of the Hungarian ministry, Stephan (Count) Tisza, appointed June 10, 1913.

HISTORY

THE AUSTRIAN MINISTRY. As noted in the preceding YEAR BOOK Count Karl Stürgkh, Austrian premier since 1911, was assassinated by a Socialist editor, Dr. Friedrich Adler, on October 21. His successor, Dr. Ernst von Koerber, after a vain attempt to sustain a ministry, gave way on December 13 to Dr. Alexander Spitzmüller, whose cabinet lasted only a few days, that is, until December 20. It was succeeded by that of Count Clam-Martinitz, a Bohemian nobleman who had been formerly minister of agriculture. The Clam-Martinitz ministry lasted six months, during which period the most important event was the convoking of the Reichsrat on May 31 for the first time since the beginning of the war. In the course of his speech from the throne on that occasion the Emperor referred to the Slav situation, saying that the constitution must be extended and the administrative foundations widened, not only in the Empire but in the component kingdoms and countries, especially in Bohemia. He promised that the rights of parliament and the true spirit of democracy would be respected. There was little prospect, however, of harmony in the Reichsrat and the ministry was in a very doubtful position. The Czechs not having been sufficiently consulted by the ministry were exasperated. The Austrian Germans were angered by the delay in the promised measures for Germanizing Austria. The Social Democrats were offended because the Emperor had not taken the oath to the constitution, and the Poles, angered by his refusal to incorporate Galicia into the new Poland, voted against the budget. The Czechs were further displeased because the prime minister had not taken a Czech into the ministry, but had taken a German instead. Then the trial, for high treason, of the Czech deputy, Klofac, caused discontent. In the first place, he was a chairman of the Czech Union and in the second place the military tribunal by which he was being tried was not regarded as competent either by the Czechs or by some of the other parties.

The political situation in the summer was very confusing. Rumors were circulated and promptly denied—it was reported for instance that Czech regiments had deserted to Russia—and it was impossible to secure exact information on account of the censorship, but signs that the Dual Monarchy was disintegrating caused alarm among the Germans. Clam-Martinitz had tried to steer a middle course. He would not uphold the absolutism of his predecessor or give way to the demands of the Austrian Pan-Germans for a *coup d'état* and the enforcement of German as the sole official language. On the other hand he did not follow the course desired by the Slavs. He said, "My programme is Austria," meaning thereby that it was the duty of a subject to regard himself as an Austrian rather than a German, or a Czech, etc., but this seemed an unattainable ideal. The Czechs regarded the ministry as entirely hostile to them, and they came to an understanding with the Jugoslavs and Ruthenians for the promotion of their respective national aims. The revelations of political and military oppression during the war caused much distrust, and though the budget passed without opposition, the Reichsrat showed itself refractory whenever any question involving nationality came up for discussion. Both Czechs and Jugoslavs claimed national independence and unity and demanded the abolition of the dual system. When the Poles also joined the opposition, the cabinet could stand no longer. The premier at first rejected the plan of the Slavs for a division of the Empire on a racial basis; then he tried to placate the Slavs by offering to create seven new cabinet offices to be filled by non-Germans; and finally he put forth a plan, the details of which were not published, for the division of Austria into four parts. These efforts failing he presented his resignation on June 18, and after an unsuccessful attempt at the Emperor's wish to reconstruct a ministry he resigned definitely on June 23. The Emperor, who appeared extremely reluctant to let him go, wrote him afterwards a letter which was extraordinarily profuse in his praises. Thereupon a new ministry was formed under Dr. Ritter von Seidler, but it was announced at the time that it was to be only of a provisional character. On June 28, the Reichsrat voted for the prolongation of its official life until December, 1918.

SLAV OPPOSITION. Hoping to come to an understanding with the Czechs the Emperor proclaimed a political amnesty on June 30. This angered the Austrian Germans, who preferred to unite with the Germans of the German Empire rather than yield any further political power to the Slavs; and it also offended the chauvinistic element among the Magyars. Nor did it have the effect of placating the Czechs in the Reichsrat. The new premier, Dr. Ritter von Seidler, and his ministers had taken no part in politics and were little known. The Czechs renewed their opposition and one of their leaders said they would not support any government unless it abolished dualism and turned the monarchy into a federal state composed of independent national divisions. They continued firm in the demand which they had formally put forth on May 30 that all Czechs and Slovaks should be united in an independent, democratic Bohemian state. Overtures of the German element in parliament to the Czech leaders were repulsed early in July. They refused to coöperate with the German deputies in any plan for constitutional revision and urged a policy of "passive resistance" against Austria, on the ground that the Czech problem was an international one and could only be decided at the peace conference after the war. If they allowed themselves to be drawn into a coalition ministry it would, they said, compromise their ultimate independence. Poles, Ruthenians, and Jugoslavs were also aiming at ultimate independence and re-union with their kinsmen outside Austria. Constitutional revision was therefore blocked. Dr. Seidler now attempted to form a permanent parliamentary cabinet, to replace the present one which from the first he had declared to be only provisional. The offer of two seats in such a cabinet was made in July to the Bohemian Club but was rejected. The Polish Club on August 6 declared that no Pole would enter such a cabinet and renewed their demand, definitely put forth on May 16, for a united, independent Poland, with access to the sea. The Jugoslav Club on August 7 passed a similar resolution. It declared that all Southern Slavs stood solidly with the Czechs and like them rejected any plan of self-government that should be limited to the existing provincial boundaries. They said the absolutism practiced in Bosnia-Herzegovina and the oppression of the Jugoslavs in Austria made agreement with the present government impossible. Of the Germans only the Nationalist party favored the plan for a parliamentary cabinet, while Social Democrats, and Christian Socialists opposed it. Thus there seemed small chance of success for it, and the only alternative was to form a permanent ministry of the bureaucratic type.

In June the national council of Czech communities issued a formal protest which in substance was as follows:—More than fifty Deputies, it said, were unable to discharge their duties, for the greater part of them had been placed under arrest. The government had brought on the war without the consent of the Czech deputies and the Czech nation; it had caused the shooting of Czech soldiers in masses; had interned hundreds of their compatriots; condemned their Deputies to death or imprisoned them; gagged or suppressed the press; spent more than sixty billions on this criminal war; and involved the Czech communities in ruin. Now it refused to let the eight imprisoned and exiled Deputies return to parliament. It had brought action against the leader of the radical Czechs only two days before the meeting of parliament, although he had been in confinement since the beginning of the war. It was preparing new trials against other Czech patriots. The calling of parliament was merely a sly trick in favor of the Central Powers, the government hoping to deceive the Allies and bring them to peace. The protest concluded with an emphatic condemnation of the intrigues and aggressions of the government and declared the determination of the Czechs to secure liberty and complete independence.

The national ideal was equally active in Poland and Galicia and the Jugoslavs also were discontented and were demanding that the promises of the central government should be fulfilled. In parliament out of the 481 deputies there were 232 Slavs who with the Socialists placed the government in a minority. They characterized the policy of Czernin as the maintenance of the old order under the appearance of modern democratic institutions, in order to deceive the Allies.

CHARGES OF THE JUGOSLAVS. In a speech delivered in the Austrian parliament on October 19 by a Croatian Deputy, the Austrian government was accused of the most terrible cruelties towards the Jugoslavs, ever since the outbreak of the war. The Deputy said that upon his trial the judge informed him he did not know what the accusation against him was and that this was natural because the authorities had arrested in Dalmatia, Istria, and Carniola alone more than 5000 persons. In transporting the prisoners they were exposed to every sort of hardship as well as to the blows of the Magyar soldiers. Many of them lost their reason on the journey. He implied that many more were arrested in Bosnia, Herzegovina, Slavonia and in the south of Hungary. Among them were professional men, journalists, and other persons of education. He gave a long array of details of death by starvation, cruelty, and murder. Little notice was taken of these charges in the German and Magyar press and a portion of his speech was suppressed. To what extent it was founded could not be ascertained, but its effect in rousing the Slavs everywhere was very great.

THE POLISH PROBLEM AND COUNT CZERNIN. The Austro-Hungarian foreign minister, Count Czernin, visited Berlin on November 5 to attend a crown council assembled by the Kaiser. It was generally understood that the chief topic for discussion was the Polish question and that the plan favored by the authorities comprised the following features:—The proclamation of the Emperor Charles as the king of Poland; the cession of Galicia by Austria to Poland, which was then to form a new state within the monarchy on the same footing as Austria-Hungary, and that in like manner Germany should take over Lithuania and Courland, granting them local self-government. There was much excitement in Germany and Austria over this scheme and in Austria there was especial concern on account of its effect upon the aims of the other Slav communities for national unity.

Also it would have an important bearing upon the destiny of the Ukrainian or Ruthenian population of East Galicia. On November 9 an important debate on the subject took place in the Austrian parliament. The Ukranians protested against the enslavement of three and one-half million of their people, the southern Slavs expressed alarm at the solution of the Polish question without relation to the Jugoslav, Bohemian and Ukrainian questions, since by leaving these out they would place the Slavs in minority in parliament; the Czechs condemned the plan as a violation of democracy and constitutional principles. The Ukrainian socialists opposed it on account of their desire to form a united independent national state out of parts of Austria-Hungary and the Ukraine. The German Socialists said it would make real democracy impossible and would leave Austria without the power of determining her own needs. The spokesman of the Jugoslavs said the plan, if carried out, would place the Ukrainians in minority in the kingdom of Poland and the southern Slavs in a minority in the rest of the Empire. The southern Slavs said they must be free not only in Austria but also in Hungary and the dual system must be abolished. Many other speeches followed to the same effect denouncing the dual system and demanding the freedom of the nationalities. The prime minister declared that it was not possible at present to solve the Polish question, but if in future the new kingdom of Poland should wish to enter into closer relations with the monarchy the representatives of the Austrian people would have an opportunity to express themselves. He declared that the Polish question did not stand in the way of peace, however it might be solved, and he gave the assurance that the Polish state should have a free choice in its political settlement.

JUGOSLAV PROGRAMME. According to a statement of Dr. Korosec, Slovene leader in the Reichsrat, on October 11, the Jugoslav aims were: Creation of an independent Slav state comprising not only all parts of Austria inhabited by southern Slavs, but also Slavonia and Croatia. They agreed with the Hungarian Premier, Dr. Wekerle, that Dalmatia belonged to Croatia-Slavonia, but held that with that region it should be incorporated in the new Jugoslav state. Toward Hungary they believed in following a friendly policy which should include coöperation with the Hungarian unified state in the political and economic tasks of the future. Toward Austria they were in a position of absolute opposition. They would refuse to support the budget or to take part in any active policy.

THE CZECHO-SLOVAK MOVEMENT. The Czechs and Slovaks—as represented by their political leaders in Bohemia, Silesia, and Moravia—aimed at an independent Czech republic. This policy was agreed upon. They wished the future peace congress to sanction this purpose and they refused absolutely to take any part in the constitutional reform of Austria in the direction of national independence because they believed it would compromise their policy in the long run. Since the beginning of the war they had claimed their complete independence and they relied upon the promises of the Entente Allies that the small nations should have a right to dispose of themselves. Their leaders argued that they had, at enormous cost of life and property, assumed the attitude toward Austria-Hungary of rebels and that if the Allies obliged them to remain under the Austrian and Hungarian yokes it would be a betrayal. The only condition, they said, under which they would accept independence for a Czecho-Slovak state inside Austria-Hungary was the transformation of the Empire into a federal republic. In this respect they were like the Jugoslavs, who also were unwilling to form a part of the Austro-Hungarian monarchy. The German element in the Empire saw in this the prospect of another war which should follow the present one, that is to say, an internal war on the part of the Slavs, not only for the dissolution of Austria, but also for the dismemberment of Hungary. Toward the end of the year the debates on this subject in the Hungarian and Austrian parliaments were exceedingly bitter. Among the Entente Allies there was not only a natural sympathy with these aspirations for independence, but in certain quarters it was argued that if realized they would thwart the German project of a middle Europe and check the drive of Germany toward the West. A prominent representative of the Slavic movement for independence said that if Poland were re-constituted, Bohemia made independent, and the Jugoslavs united, an insurmountable barrier would be raised across the pathway of Germany to Bagdad.

HUNGARY: FALL OF THE TISZA MINISTRY. There were frequent reports early in the year of disturbed conditions in Hungary. In April it was said that the Hungarians at a secret council at Easter had adopted a resolution in favor of following the example of the Russian revolutionists. In a stormy session of the Hungarian Chamber Count Batthyani denounced Count Tisza as a blood maniac and said that the only way to end the war was to dismiss him. The opposition to Count Tisza on grounds of domestic policies, that is to say, for his refusal to introduce suffrage and other reforms in Parliament solidified in April and a strong element led by Count Andrassy, Count Apponyi, and Michael Karolyi declared finally that they would have nothing to do with the Tisza government. The government still continued in power and on April 29 it forbade a meeting in front of the parliament building for the purpose of discussing voting reform. Count Tisza delivered a speech to the workmen's party saying that neither voting reforms nor the prolongation of parliament which the opposition was demanding was necessary. For a time there was an effort to form a coalition government, but this failed, and the opposition now endeavored to overthrow Count Tisza and form a cabinet under Andrassy. Finally, on May 23, Count Tisza resigned, the reasons assigned being the differences with the throne over franchise reform measures. It was said that Tisza did not wish to go so far in that direction as the Emperor desired. On May 29 Count Julius Andrassy, former prime minister and for a long time one of the leading opponents of the Tisza ministry, became Prime Minister. He was described as a Liberal of the advanced type. Early in the war he, with Count Apponyi and others, had agreed not to antagonize the government's foreign policy but after August, 1916, they broke with the government, especially on account of differences in regard to domestic affairs.

The fall of the Cabinet came as a surprise in spite of the fact that on many previous occasions the crisis was said to be approaching.

Count Tisza had been regarded as one of the chief authors of the war. His government was extremely unpopular with the progressive element. Much disappointment and distrust were occasioned by the promises of reform which were never fulfilled. Instead of universal suffrage, which was demanded by the entire people, the government merely announced that it would permit non-commissioned officers and soldiers who returned from the war with military decorations to enjoy the right of voting. There was even criticism of the Hungarian government on the part of certain elements in Austria. The newspapers in Vienna, for example, characterized Hungary as the most backward country of Europe. During the month that preceded the fall of the cabinet the Austro-Hungarian government, as well as the German government, had promised all sorts of reforms in the direction of democracy. In Austria-Hungary the government developed a programme that seemed to offer concession to the Slavs. The Slavs in general, however, were very distrustful of this policy, regarding it as an attempt to deceive. They argued that the German element in the empire would never recognize their privileges. In Hungary the privileged classes opposed even more bitterly all popular and national claims and Count Tisza and his ministers were perfect representatives of this reactionary class.

Political observers among the Entente Allies, however, did not anticipate much improvement as a result of the fall of the cabinet and above all they discouraged any confidence that Austria-Hungary would make a separate peace.

A well-known writer for the Press declared: "Among the mistakes of the present hour there is none more serious than the belief in the possibility of the offer of a separate peace by Austria. Austria provoked the war and she cannot reject her responsibility without being guilty of treason. Moreover, Austrian and German troops are so intermingled that a separation of them would be impossible. An attempt at a separate peace would be regarded by the people merely as an expedient to save the throne."

OTHER EVENTS. In her war policy Austria-Hungary continued to coöperate cordially with her imperial ally. On January 5 the Emperor addressed the troops on the subject of the peace policy of the Central Powers and on January 12 despatched a new note on that subject to the neutral governments. On January 26 the agreement between Austria and Hungary, known as the *Aus-gleich*, was renewed for the period of twenty years. The changes that were made in it were all in favor of Hungary, whose share in the common expenses was reduced from 36 per cent to 34 per cent. It also provided that export duties should be modified to the advantage of the Hungarian agricultural interests, and that Hungary's securities should be admitted to the Vienna stock exchange.

On January 4, the Emperor commuted the death sentence of four prominent Czechs charged with treason to various terms of imprisonment. Dr. Kramarz, charged with trying to aid Russia, was sentenced to fifteen years in prison. The general amnesty proclaimed on the King's coronation applied only to Hungary. Another important trial was that of Dr. Friedrich Adler, who, as noted above, had assassinated Count von Stürgkh, the Austrian Prime Minister, on October 21, 1916. On May 19 he was sentenced to death. In the course of a plea on his own behalf he declared that he had been driven to the act by the government's violation of constitutional rights in suppressing trial by jury and refusing to summon parliament.

On April 4, the resignation of the three Austrian Ministers of Justice, War, and Finance was announced on account of a scandal pertaining to army supplies furnished by a former director of the Vienna Deposit Bank. They were said to have aided him in escaping after he had made illegal sales of foodstuffs to the army at exorbitant prices. The Emperor refused to accept the resignation of the Minister of Justice, von Schenck, but in April accepted the resignation of General von Krobatin, the minister of war, who was succeeded by General von Steinstettin. On April 18, two more ministers resigned, Dr. Urban, minister of commerce, and Dr. Baernwerther, minister without portfolio.

See FINANCIAL REVIEW; NAVAL PROGRESS; WAR OF THE NATIONS.

AUTHORS' LEAGUE OF AMERICA. The League is a business association of authors and others identified with the production of books, and of persons in artistic work. Its special purpose is the guarding in every way of the interests of all who are engaged in the creation of copyrightable material and to work towards the improvement and standardization of the conditions under which such material is sold, leased, or otherwise made accessible to the public. Writers, whether of novels, poems, essays, stories, or educational books, also writers of dramas and photo-plays, painters, illustrators, composers, sculptors, and photographers may become regular members. Publishers, theatrical managers, literary, and dramatic agents are among its associate members. Through its claim, general business, confidential information, copyright, registration, forwarding, accounting, bulletin, employment, and other bureaus, the League is able to advance the interests of its members in various ways, especially by its advice concerning contracts, in the collection of accounts, and by assistance in securing copyrights. In addition to its work as a business association, the League has frequent meetings of a social character.

The officers for 1917-18 are: President, Rex Beach; vice-president, Theodore Roosevelt; secretary and treasurer, Eric Schuler; counsel, B. H. Stern; consulting accountant, Richard T. Lingley.

AUTOMATIC RIFLE. See MILITARY PROGRESS.

AUTOMOBILES. In the design of the 1918 cars, passenger as well as commercial or military, developed during the year 1917, the influence of war conditions was distinctly seen, both in the attempts to secure greater simplicity and standardization, and in efforts to adapt the motors to consuming a lower grade of fuel in the interests of economy. This last consideration, of course, resulted in considerable attention being paid to the carburetor and some of the devices employed were an electric coil to raise the temperature so as to enable the fuel to vaporize more readily or a somewhat complicated stove arrangement heated by the exhaust from the engine. In the passenger cars themselves, deeper and lighter frames were being employed without any sacrifice of strength. With this tendency to lightness in body construction many believed that future developments of pleasure cars would show still greater improvement in the design and construction of the bodies.

In the 1918 cars apparently the limit has been reached in the size of wheels, as with the better roads further efforts in this construction were not desirable. The stream lines which had been developed in part for speed, continued to figure, but rather on the score of economy. For later cars the one-man top had become practically universal, and with it was seen the inclined windshield, this also serving to reduce the air resistance. For a like purpose care was being expended on the front mud guards and by properly fashioning them, a saving was made here also. The self-starter having become a necessity rather than a luxury was receiving attention, as it too figured to an increased degree in economy as it prevented the waste due to the further operation of the engine when the car was at rest. These and other developments made during the year were of interest, inasmuch as purchasers as well as designers were becoming impressed with the need of considering economies, particularly if the price of fuel continued to rise or if there were government restrictions imposed on its use in the course of the war. Economy of maintenance, greater endurance, and reliability were the points sought after by discriminating purchasers and were being met by manufacturers not in innovations but in selection of materials, better workmanship, and improvement of details.

GAS DRIVEN MOTOR VEHICLES. One of the developments of the year in Great Britain was the use of gas in motor vehicles as a substitute for gasoline. Messrs. Barton Brothers of Beeston successfully worked out a system which employed a flexible balloon-like gas-holder ranging in size from 150 to 500 cubic feet capacity, carried on the roof of the vehicle. A very low pressure was used for the gas stored and consequently there was available fuel for but a short run. An advantage, however, was that the gas-holder could be replenished at almost any point, and that it was cheap and of light weight. On the Continent of Europe, compressed gas under a maximum pressure of 120 atmospheres, and even up to 200 atmospheres had been employed, but the difficulty of securing the steel or iron cylinders for such holders prevented extensive experiment in Great Britain with the higher pressures. A joint committee of the Commercial Motor Users' Association, the British Commercial Gas Association, and the National Gas Council was appointed to further the use of gas as a fuel for motor traction, and late in the year the Automobile Association Executive Committee decided to offer a prize of £1000 for the best invention which would enable coal gas to be used with advantage as a propellant of motor cars and motor-cycles.

UNIFLOW ENGINES FOR ROAD VEHICLES. The extensive use of the uniflow engine naturally led to its consideration as a source of power for road vehicles. Such an engine with tripleported admission valves and auxiliary exhaust valves which caused the points of compression to occur late in the stroke instead of at the point where the piston covers the main exhaust ports as is customary with uniflow engines, was fitted to a traction engine and was tested in the Mechanical Engineering Department of the Ohio State University. A paper by F. W. Marquis before the American Society of Mechanical Engineers in 1917 described this test, which demonstrated that with saturated steam and working non-condensing, the engine had a lower steam consumption than an ordinary compound engine similarly working, while when working non-condensing, it had approximately the same consumption as a compound counter-flow engine working condensing on the saturated steam. These experiments were typical of the interest in various forms of increased economy for engines for road vehicles due to the rising cost of the lighter petroleum fuels.

A KEROSENE GASIFIER. An invention which it was thought might possibly solve the motor fuel problem was a kerosene gasifier or vaporizer which could be fitted to any car, making possible the use of kerosene for fuel, as well as gasoline, without any changes in carburetor, spark plugs, etc. The new gasifier was installed between the carburetor and the intake manifold, taking kerosene from the former and vaporizing it before its entrance into the cylinders. The vaporization was accomplished by arranging the exhaust pipes to pass around the gasifier, thus heating the kerosene and transforming it to a gas. In thus using kerosene, it was necessary to start the motor by using gasoline which was stored in a small additional tank, the regular tank holding the kerosene. Once the gasifier had become hot the kerosene was picked up automatically and the motor run on the gasified kerosene. A single gallon of gasoline was sufficient for about 200 starts, and in the test of a stock touring car fitted with a gasifier, 21.5 miles were made on a gallon of kerosene as compared with 15.21 miles on a gallon of gasoline.

MUFFLER CUT-OUT. The National Automobile Chamber of Commerce decided during the year to give up the fitting of muffler cut-outs to cars on the ground that little additional power was developed by this use, as with a properly designed muffler the loss was unappreciable. Furthermore, the noise of the muffler cut-out was decidedly objectionable.

THE STANDARD ARMY TRUCKS. An important event in automobile engineering was the development of the new standard army trucks which were especially designed for the Quartermaster Corps by representatives of the Society of Automotive Engineers with the assistance of many manufacturers, whose engineering and production departments contributed many trade secrets. Early in August a conference of about 50 truck specialists and engineers was held in Washington, and by September the design of the new standard truck was completed and work on the parts was immediately put under way. The class A model was to have a nominal carrying capacity under the ordinary Federal ruling of 1½ tons, while the class B truck was to have a nominal capacity of 3 tons and an actual capacity of 5 tons. Both trucks were to have a two-wheel drive with a speed of 14 miles per hour for the class A, and 12 miles per hour for class B. With the exception of slight differences in cylinder bore, pistons, piston parts and rigging, the aim was to secure the greatest possible interchangeability in the parts and the entire manufacture was standardized in accordance with the best practice for American motor car works.

During October, the first of the five-ton motor trucks was sent to Washington from a factory in New York State where it was assembled, and on its road journey as well as in subsequent tests it met all expectations. In this truck the wheel base was 160 inches and the four cylinders of the engine were 4¾ by 6 inches with 424 cubic inches piston displacement. The transmission was a four-speed, amidships clutch, dry disk inclosed; there was a worm drive and rear axle of full floating type. There was a fuel feed by gravity from a 15-gallon tank on the dashboard with a 16-gallon reserve tank under the seat.

There was double ignition with battery and magneto systems entirely separate.

The three points of advantage claimed for the new design were the best possible lubrication, a water jacket reaching every hot point, and rigidity without undue weight. There was an entirely enclosed governor. The cylinders were cast in pairs with detachable heads, and the spark plugs were placed in pairs side by side in the centre of the cylinder. There was complete pressure lubrication, while the airpump was in a separate assembly with its shaft coupled with the drive shaft. The early tests of the first two Liberty trucks that were to be assembled exceeded the expectations of the Quartermaster's Department of the United States Army and also of the engineers and draftsmen who worked on the design. The engine showed 58 hp. at 1350 r.p.m., and the engine torque curve was better than anticipated. In addition to its military use it was stated that the United States heavy-duty war truck would play a large part in affecting truck design in commercial circles.

A ONE-TON FORD TRUCK. One of the developments of the year was the commercial production of one-ton trucks by the Ford Motor Company. These machines involved a heavier chassis than in the familiar pleasure car model and a wheel base of 123 inches with rear wheels 32 x 3 inches solid tire. The rear axle was modified for worm drive, while the propulsion stresses were taken care of by radius rods with pivot connections at the outer ends of the rear axles. Heavier springs of the familiar transverse type were employed at the rear. The engine, hood, planetary-gear system, clutch, front axle, front wheels, steering gear, and lighting system were the same as the pleasure car of the familiar model T. The sale price of this truck was announced as $600.

MOTOR DRIVEN VEHICLES FOR STREET CLEANING. In the annual report by J. F. Fetherston, the New York City Department of Street Cleaning for the year 1916, published in 1917, reference was made to the extensive use of motor vehicles to displace the horse-drawn vehicles, and hand cleaning. In a model district in the city of New York, a thorough test was made of tractors and trailers as well as of motor driven flusher-sweepers. The trailers were designed to collect in separate containers, ashes, street sweepings, garbage, and rubbish, and these containers could be removed easily and discharged into a scow by tackle and derrick boom. The combination flusher-sweepers also proved effective, and it was estimated that $68,000 was saved to the city by the more modern equipment in 1916 as compared with 1914 when horses were used exclusively.

MOTOR TRUCK TRANSPORTATION. Truck transportation in all the civilized countries attracted much greater interest in 1917 than ever before. One of the developments in England was to provide loads for empty trucks on their return from delivery of their original cargo. In certain of the districts such work proved remarkably effective and released the corresponding amount of much needed rail facilities. In the United States large capacity motor trucks were being used by manufacturers and others to deliver raw materials and finished products, especially where the haul was not too long and the roads were adequate and well maintained. In some instances manufacturers were employing motor trucks to haul coal to relieve the railway congestion, while in other cases, especially between Philadelphia and New York, it was found that a 12-hour motor truck service could be maintained at a cost not in excess of railway express rates. In a number of cases where factories were maintained within 50 miles from great cities, such as New York and Boston, a regular service was organized and a daily schedule maintained.

In December, 1917, the United States Post Office Department called for sealed proposals for bids on a motor mail route between New York and Hartford, the cars going by way of Waterbury, Danbury, and White Plains, a distance of 105 miles and maintaining a scheduled time between the two terminals. It was proposed to leave Hartford at 5.30 in the morning and reach New York at 3.30 in the afternoon of the same day, and also maintain corresponding hours in the opposite direction. In addition to carrying mail bags, the drivers would sell stamps and receive and deliver registered matter along the route. The Post Office Department contemplated the establishment of a large number of parcel post motor routes in various parts of the United States and was to ask Congress in 1918 for the necessary authority.

In April, 1917, a regular service of automobile trucks, described as "highway freight trains," was established by the Goodyear Tire and Rubber Company, to operate over country roads from Akron, Ohio, to Boston, covering 1510 miles in a week. It was called the "Akron and Boston Express," and the equipment consisted of two White and two Packard trucks, of 1½, 3, and 5 ton capacity, which later was to be increased. A regular schedule was maintained, calling for the round trip (1510 miles) in less than one week, and the cars usually were on time. The new service was able to compete as regards time and costs with the ordinary express companies. Tires were carried on the eastward trip and cotton fabrics and machinery on the return trip, while several trips were made to Washington, D. C., with "war orders."

The only serious difficulty in ordinary weather was 28 miles of unimproved road on the route, where mud caused trouble. Another handicap was the poor condition of some of the old wooden and steel bridges. The trucks use pneumatic tires exclusively.

In the construction of the various cantonments and other military camps, motor trucks played an extensive part, and in many cases they were furnished by the Quartermaster's Department to expedite the construction. Often these trucks enabled lumber and other supplies to be carried a considerable distance before the railway sidings were completed up to the camps, and they afforded a unique test of their capabilities under rough conditions. At Camp Custer, near Battle Creek, Mich., where two companies with from 30 to 40 trucks, each, were furnished by the Quartermaster's Department, U. S. A., one company was equipped with 3-ton trucks and the other with 1½-ton trucks. The soil was sandy and both the main and temporary roadways were soon cut into deep ruts, and it was found that the lighter trucks were so much more serviceable that the 3-ton trucks were eventually shipped away to other fields of service.

On December 16 a train of 30 Packard army trucks left Detroit for the Atlantic seaboard, a journey of 600 miles by road in order to test the feasibility of overland transportation, and also to save the freight cars required, as but two of the trucks could be shipped in a 40-ton freight car. Considerable snow was encountered on the trip, and the motor train received a severe test, as the roads left much to be desired. Steady progress was made and the seaboard eventually reached and it was determined to give to other trucks a similar test in order to train their drivers and the transportation troops, as well as actually to transport needed materials.

STATISTICS OF 1917. The annual statistics compiled by the National Automobile Chamber of Commerce for the year 1917 revealed a continued and extraordinary development in the use and manufacture of motor vehicles. In 1917, there were registered in the United States 4,842,139 motor vehicles, of which New York State claimed 418,000. The number of motor trucks in use in the United States was approximately 435,000. On January 1, 1917, there were in use in all countries outside of the United States 719,246 motor vehicles, of which there were in Europe, 437,558; in Canada, 118,086; in South America, 39,188; and in Eastern Asia, Australia, and Oceania, 55,340. In 1917, there were 550 motor vehicles manufacturers in the United States, in 32 different States, having an invested capital of $736,000,000 and employing approximately 280,000 workers. Commercial vehicles were manufactured by 372 firms or corporations and passenger vehicles by 238 factories. In the fiscal year ending June 30, 1917, 1,806,194 motor vehicles were produced in the United States, of which 1,693,994 were passenger vehicles, and 112,200 were commercial cars. The wholesale value of these vehicles was stated at $917,470,938. In the calendar year 1917, there were produced 1,795,840 passenger cars and 181,348 commercial cars. The average price of the passenger car of 1917 was $720. The value of automobiles, trucks, engines, tires, and parts exported from the United States in the fiscal year ending June 30, 1917, was $133,411,217, which was made up in part of 64,834 passenger cars valued at $48,620,928, and 15,977 commercial cars valued at $42,337,315. The remaining items consisted of automobile engines, tires, and other parts valued at $42,452,974. In addition to the manufacture of motor vehicles, the making of bodies, parts, and various accessories and articles used in the automobile trade, involved 6789 manufacturers, of which 1080 were body, parts, and accessories makers with a capital of $336,000,000, employing 320,000 workers. In the fiscal year ending June 30, 1917, 18,000,000 automobile tires valued at $450,000,000 were manufactured in the United States. On the commercial and maintenance sides, as well as in manufacturing motor vehicles, there figured a large number of dealers, garages, repair shops, etc., which were conservatively estimated at 46,000, the dealers alone aggregating 27,000, the garages 25,500, and the repair shops 13,500. Tire vulcanizers numbered 12,000, automobile supply houses, 2550, and jobbers in automobile supplies, 282. The invested capital of dealers, garages, etc., was estimated at $184,000,000.

Two of the leading statistical considerations of the year were the provision of transportation facilities by motor vehicles and trucks to relieve the railways of short haul, freight, and passenger traffic, and the great registration of automobiles in agricultural States of the west and south. Furthermore, a consideration was the replacement of horses by motor trucks and thus releasing for the production of human foods some 10,000,000 acres of land that would be required to sustain horses. An estimate of the tons of goods hauled yearly by motor trucks was 1,200,000,000, and the cost of haulage was estimated at 18 cents per ton mile as compared with 24 cents per ton mile by horse and wagon.

The statement was made that in the United States, there were 24 persons to every one motor car, and in eleven Middle West States, there were 17 persons, while in eleven Eastern States, there were 26 persons. In 1917, it was estimated that 40 per cent of the cars were sold to farmers, and to each mile of public road there was 1.72 cars, and to each mile of surface road 14.77. The number of automobiles in the United States for each square mile was 1.4.

SPEED RECORD. A speed record for a motor car was made on the Sheepshead Bay track by an aluminum racing car, which completed 100 miles in 54 min., 20.98 sec., or an average speed of 110.4 miles per hour. The engine gave 135 horsepower and weighed only 490 lb. or about 3½ lb. per horsepower.

RACING EVENTS. Practically all the principal automobile racing fixtures were cancelled during 1917 because of the war. Ralph De Palma contributed the most noteworthy performance of the year by establishing a new world record for six consecutive hours at the Sheepshead Bay Speedway. He drove a Packard car, equipped with a Liberty Motor, 633.12 miles at an average of 105.6 miles an hour. In the first hour De Palma covered 112.96 miles, as against the old record of 107.9 miles established by Dario Resta, Eugene Chassagne, and Lee Guinness, driving alternately, at the Brooklands Track, England, on October 1, 1912. De Palma also was the victor in the triangular race held at Sheepshead Bay, his opponents being Barney Oldfield and Louis Chevrolet.

Two new competitive speedway records, regardless of class, were made by Ralph Mulford at Chicago. He drove a Hudson Special 150 miles in 1 hour, 26 minutes, 14.9 seconds and 200 miles in 1 hour, 55 minutes, 11.05 seconds.

AVIATION. See AËRONAUTICS.

AVIATION FIELDS, AMERICAN. The United States Army Signal Corps maintained during 1917 the following signal corps aviation fields, all of which were being equipped as training or supply camps, and were named for officers who had lost their lives in the flying service, or for famous aëronautical engineers:

CALL FIELD, Wichita Falls, Texas, named for Lieutenant Loren H. Call, C. A. C., killed July 8, 1913.

CHANDLER FIELD, Essington, Pa., named for Lieut. Rex Chandler, C. A. C., killed April 8, 1913.

CHANUTE FIELD, Rantoul, Ill., named for Octave Chanute, the pioneer aëronautical engineer, who died a natural death in 1911.

ELLINGTON FIELD, Houston, Texas, named for Lieut. E. L. Ellington, killed November 24, 1913.

GERSTNER FIELD, Lake Charles, La., named for 2nd Lieut. Frederick J. Gerstner, 10th Cavalry, who was drowned December 21, 1914.

HAZELHURST FIELD, Mineola, L. I., named for Lieut. L. W. Hazelhurst, Jr., killed June 11, 1912.

KELLY FIELD, San Antonio, Texas, named for 2nd Lieut. G. E. M. Kelly, 30th Infantry, killed May 10, 1911.

LANGLEY FIELD, near Old Point Comfort, Va., named for Professor Samuel P. Langley, who died a natural death in 1916.

Love Field, Dallas, Texas, named for Lieutenant Moss L. Love, 11th Cavalry, killed Sept. 4, 1913.

Park Field, Memphis (Millington), Tenn., named for Lieut. Joseph D. Park, 14th Cavalry, killed May 9, 1912.

Post Field, Fort Sill, Okla., named for Lieut. Henry R. Post, 25th Infantry, killed Feb. 9, 1914.

Rich Field, Waco, Texas, named for Lieut. Perry C. Rich, Phil. Scouts, killed Nov. 13, 1913.

Rockwell Field, San Diego, Cal., named for Lieut. Lewis Rockwell, 10th Infantry, killed Sept. 28, 1912.

Selfridge Field, Mt. Clemens, Mich., named for Lieut. Thomas Selfridge, F. A., killed Sept. 17, 1908.

Camp Taliaferro, Fort Worth, Texas, named for Lieut. Walter R. Taliaferro, killed Oct. 11, 1915.

Scott Field, Belleville, Ill., named for Corporal Scott, killed Sept. 28, 1917.

Wilbur Wright Field, Dayton, Ohio, named for Wilbur Wright, who died May, 1912.

BACTERIA. See Botany.

BADEN. A European grand duchy, one of the more important constituent states of the German Empire. The capital is Karlsruhe. Baden is bounded by Bavaria on the east and is separated by the Rhine River from the Palatinate and Alsace on the west and from Switzerland on the south. The area is 5819 square miles, which is somewhat smaller than the land area of Connecticut and Rhode Island. The population at the census of December 1, 1910, was 2,142,833, as compared with 1,867,944 in 1900, 1,657,867 in 1890, 1,432,000 in 1864, and 1,006,000 in 1816. The average annual increase from 1816 to 1910 was 0.80 per cent; from 1900 to 1910, 1.37 per cent. In 1910, communes having 2000 or more inhabitants aggregated a population of 1,234,087. Roman Catholics numbered 1,271,015 (59.32 per cent); Evangelicals, 826,364 (38.56 per cent); other Christians, 13,229 (0.62 per cent); Jews, 25,896 (1.21 per cent). Baden has a bicameral diet. The lower house consists of seventy-three members, elected by direct vote for four years. The grand duke in 1917 was Friedrich II, who was born July 9, 1857, and succeeded his father, Friedrich I, September 28, 1907.

BAEYER, Adolph von. A German chemist, died, August 24, 1917, at Starnberg, Germany. He was born at Berlin in 1835, studied chemistry under Bunsen and Kekulé, and in 1858 graduated at Berlin University as Ph.D. He was privat docent at Berlin until 1866, when he was appointed assistant professor. Appointed professor of chemistry at Strassburg in 1872, he filled that position for three years after which he taught at the University of Munich. In 1881 he won the Davy medal awarded by the Royal Society, London, for his researches on indigo; and in 1905 he gained the Nobel prize for chemistry. His work in organic chemistry gave him very high rank in that branch of science, especially his synthesizing of a remarkably large number of carbon compounds, including new classes of substances, some of which are important not only from a theoretical point of view, but have also been extensively applied in the arts. His works in two volumes were published in Brunswick, Germany, in 1905.

BAFFIN LAND. See Polar Research.

BAGOBO. See Anthropology.

BAHAMAS. The Bahamas, the most northerly of the British West Indian colonies, are a chain of coral islands lying between 21° 42′ and 27° 34′ N. lat. and 72° 40′ and 79° 5′ W. long., composed of about 20 inhabited islands, and an immense number of islets and rocks. The principal islands are New Providence (containing the capital, Nassau), Abaco, Harbour Island, Eleuthera, Inagua, Cat Island, Ragged Island, Rum Cay, Exuma, Long Island, Long Cay, and the Biminis, Watling's Island, all of which are ports of entry; and Great Bahama, Crooked Island, Acklin Island, Mayaguana, the Berry Islands, and Andros Island (containing the only river). The total area is 4403½ square miles, and the population (estimate) 58,129 in April, 1916 (55,944 in 1911). In the following table revenue and expenditure are for fiscal years:

	1909	*1912*	*1913*	*1915*
Imports	£343,489	£358,111	£403,529	£363,410
Exports * ..	165,116	276,115	263,954	243,431
Revenue ...	77,578	97,574	100,758	86,251
Expenditure.	92,858	88,077	96,496	90,925
Shipping † .	1,304,660	1,247,844	1,747,779	682,264

* Of colonial produce. † Tonnage entered and cleared.

The public debt on March 31, 1916, was £33,518. The population is mainly negro.

BALKAN STATES. The countries comprising the southeastern part of Europe west of the Black and Ægean seas. Parts of this region have frequently been the scene of sanguinary strife between the jealous nationalities. See Albania; Bulgaria; Greece; Montenegro; Rumania; Serbia; Turkey; War of the Nations; also Dobruja; Epirus; Macedonia.

BALLOONS. See Aëronautics.

BALLOT. See Electoral Reform.

BALTIC PROVINCES. A term designating the Russian governments of Esthonia, Courland, and Livonia. They border the Baltic Sea and inclose the Gulf of Riga. Area and population as estimated for January 1, 1915: Esthonia, 7818 square miles, 512,500 inhabitants; Courland, 10,535 sq. m., 812,300; Livonia, 18,158 sq. m., 1,778,500; total, 36,511 sq. m., 3,103,300 inhabitants. The principal cities include Riga (see War of the Nations), capital of Livonia, an important commercial seaport, with an estimated population, before the great war, of about 569,000; Revel, capital of Esthonia, a fortified seaport, 137,600; Libau (Libava), seaport, 90,700; Mitau (Mitava), capital of Courland, 46,800; Dorpat (Yurev, Yuriev), university town, 44,100. See Courland; Esthonia; Livonia.

BANARO. See Anthropology.

BANK CLEARINGS. See Financial Review.

BANKS AND BANKING. While every recent year has seen a remarkable growth in the banking strength of the United States the developments of any previous year were exceeded by those of 1917. This was due fundamentally to the remarkable development of strength and the perfected organization of the Federal Reserve System; but indirectly a considerable effect resulted from the immense increase in the gold holdings of the American banks. By the close of 1917 the deposits of the Federal Reserve Bank, due in part to changes in the law, exceeded those of any other bank in the world. In addition at least one-third of all the greatest banks of the world were to be found in the United States. Below is given some account of the Federal Reserve System and some indication of developments in foreign banks. Material of interest in this connection will be found under AGRICULTURAL CREDIT where the establishment of the Federal Farm Loan banking system is described; FINANCIAL REVIEW; NATIONAL BANKS; STATE BANKS; and SAVINGS BANKS.

FEDERAL RESERVE SYSTEM. The third year of the operation of the Federal Reserve Banking System was completed November 16, 1917. While the great advantage of this system had been amply demonstrated by the avoidance of panic in the fall of 1914, its great strength and the relative completeness of its organization of the banking and credit facilities of the country were amply demonstrated by the ease with which the first and second liberty loans exceeding more than $6,000,000,000 were floated.

In a summary of "What the Federal Reserve System Has Done," Mr. H. Parker Willis (the *American Economic Review*, vol. VII) pointed out that it had organized a plan of coöperative banking covering the entire country with a central supervisory agency at Washington; it has to some extent harmonized and unified interest rates, met currency demands readily, eliminated the former difficulties of crop moving periods, and otherwise secured the advantages of centralized banking without some of the latter's defects; and it has made considerable progress toward the pooling of banking resources and the establishment of uniform control over gold reserves. In addition, it has accelerated the standardization of commercial paper, including the bankers' acceptance; has established and carried through to completion a uniform and universal system of check collections; and has stimulated the movement for the introduction of uniform standard methods of business accounting. As yet, however, this system has done little in the development of foreign banking connections and opportunities; it has not developed policies to aid American manufacturers in the retention of foreign trade; nor has it rendered full service in the development in the United States of an international discount market.

Various amendments to the Federal Reserve Act were approved by President Wilson on June 21. In its third annual report in February the Federal Reserve Board had proposed numerous amendments, of which the more important dealt with reserve requirements and note issues. The most important of the eleven new provisions permits each reserve bank to count as part of its gold reserves the gold deposited by it with federal reserve agents against note issues. Previously this gold did not count among the bank's assets so as to be available for credit purposes. Under the new provisions the reserve notes will, it is believed, still be amply protected by at least 100 per cent of commercial paper or gold or both as heretofore, but the reserve banks will be able to pool their gold reserves under the control of the Federal Reserve Board at Washington. It is believed that this gold can thus be more amply protected when necessary and more effectively used when needed. That the new plan will permit a tremendous expansion of credit is shown by the calculation that at least $1,000,000.000 of new notes can now be issued by the reserve banks in case of a commercial crisis. Moreover, it is anticipated that if the war should terminate suddenly this provision will go far toward preventing a panic; and that, when peace comes, suddenly or otherwise, the unified control of the enormous gold holdings of the system will enable the American banking system to meet the inevitable exportations of gold with less disturbance. The changes in the distribution of reserves may be briefly indicated. Under the original act the central reserve banks were required to hold at least 18 per cent of reserves against demand deposits and 5 per cent against time deposits. The new law reduces these minimum percentages to 13 and 3 respectively with the proviso that the entire reserves may be kept in the Federal Reserve Bank. Under the original act reserve banks were required to hold 15 per cent against demand deposits and 5 per cent against time deposits; the amendment reduces these to 10 per cent and 3 per cent respectively of which all may be deposited in the Federal Reserve Bank. In the original law country banks were required to keep 12 per cent against demand deposits and 5 per cent against time deposits; the amendment reduces these to 7 per cent and 3 per cent respectively, of which all may be deposited with Federal Reserve banks. Thus the more than 7500 individual banks are in a position where they need keep only "till money" on hand, all other reserves being in the reserve institutions.

Another amendment permitted local non-member banks and trust companies, even though too small to be eligible to membership in the System, to utilize the facilities of the reserve banks for clearing and collection, on condition that they cover checks on themselves sent to the reserve banks for collection and keep in addition a compensating balance at the reserve bank. This was designed to universalize the collecting and clearing system and thus increase its serviceability and convenience for the public. Another amendment permits national banks under the approval of the Federal Reserve Board to accept import or export paper up to 100 per cent of their capital and surplus. Another cancelled the requirement that national banks maintain a minimum deposit of government bonds with the United States Treasury. This was designed to alleviate the condition of certain national banks that had retired all their circulation but were still required to have on deposit with the treasurer a certain amount of government bonds. New national banks organized since the passage of the Federal Reserve Act have been free from any such requirement.

Increased Membership. As a part of the general plan of consolidating the gold reserves and banking resources of the nation special effort was made to induce state banking institutions to enter the system. Among the amendments adopted on June 21 was one guaranteeing that by taking membership in the System no state bank would sacrifice any charter privileges. This guaranty was strengthened by an opinion of the Attorney-General, September 10, holding that this amendment released state bank members from anti-trust legislation intended to prevent "interlocking directorates." With the opening of the campaign for the second Liberty Loan on October 1, additional pressure was brought to bear on the state institutions. On October 13 President Wilson issued a letter in which he urged "upon the officers and directors of all non-member state banks and trust companies which have the required amount of capital and surplus to make them eligible for membership, to unite with the Federal Reserve System now and thereby contribute their share to the consolidated gold reserves of the country." Numerous state banks and trust companies fell into line. By November 1 enough had joined to bring within the System 70 per cent of the entire banking resources of the country.

Reserve Bank Statement. The most notable change in the statement of resources of the Federal Reserve Bank was the enormous increase in the gold holdings due primarily to the amendments above outlined. There was a corresponding increase in the deposits due to members. The consolidated statement of the twelve Federal Reserve banks for December 8 showed a total reserve of $1,683,307,000. This was an increase of $994,000,000 over the corresponding week of 1916. All of this reserve except $51,949,000 of legal tender notes and silver was in the form of gold. This was distributed as follows: gold coin and certificates in vaults, $500,656,000; gold settlement fund, $376,776,000; gold with foreign agencies, $52,500,000; gold with Federal Reserve agents, $683,939,000; and gold redemption fund, $17,485,000. The total earning assets of the twelve banks aggregated $978,120,000, or four times the amount for the same date in 1916. These included: bills discounted for members, $686,902,000; bills bought in open market, $190,682,000; and bills slightly over $100,000,000 of United States and municipal securities. Nearly all of this increase in earning assets was in the item of bills discounted for members. The aggregate resources for the twelve banks were $3,001,836,000, as compared with $961,195,000 in December, 1916. The total deposits were $1,809,265,000, or about treble the amount for 1916. The principal item was the sum due to members on reserve accounts which aggregated $1,437,174,000. The total amount of Federal Reserve Notes in actual circulation was $1,110,537,000 or slightly more than four times the amount for 1916.

The gold reserve against net deposit liabilities was 63.1 per cent as compared with 69.8 per cent for 1916. Gold reserve against notes in actual circulation was 63.2 per cent as compared with 103.4 per cent in 1916. Of the twelve banks that of the second (New York) district was far the most important as regards reserves and business. Thus its total gold reserves were $592,923,000 or 35 per cent of the total for the entire system. Its total resources considerably exceeded $1,000,000,000, being more than one-third of the total. The second largest bank was that at Chicago, while those at Cleveland and Philadelphia ranked next in size.

FOREIGN BANKS. In a general way the changes in the statements of the most important foreign banks were similar to those here. In all but Germany there was a tendency for gold coin and bullion held in vault or abroad to increase. Deposits expanded in all cases much more rapidly than gold holdings; while the most rapid expansion was found in loans and in investments and in note circulation. On August 1, 1914, the Bank of England held $190,000,000 of gold coin and bullion; on August 1, 1916, $270,000,000 of gold coin and bullion plus $142,000,000 of gold held against exchequer notes; and on August 1, 1917, $250,000,000 of gold coin and bullion plus $142,000,000 against exchequer notes. Its loans and investments, August 1, 1914, amounted to $290,000,000; 1916, $585,000,000; 1917, $800,000,000. Deposits for 1914, $335,000,000; for 1916, $680,000,000; for 1917, $865,000,000. Bank note circulation for 1914, $145,000,000; for 1916, $183,000,000, and for 1917, $200,000,000. Exchequer notes to the amount of $635,000,000 were outstanding on August 1, 1916; one year later their number had been increased by $170,000,000. These notes partially replaced gold but for the most part were an addition to money in circulation made necessary in part by increased business and higher prices. They were redeemable in gold on presentation at the Bank of England. While other English banks are not required to publish statements a summary of the condition of thirteen principal institutions on June 30, 1917, showed total loans of $2,335,000,000, an increase in one year of $420,000,000. Their deposits aggregated $4,348,000,000, an increase of $347,000,000 in one year.

The Bank of France held gold coin and bullion in its vaults on August 1, 1914, amounting to $825,000,000; on the same date in 1916, $958,000,000; but in 1917 it held $650,000,000 in vault and $400,000,000 abroad. Its commercial discounts and advances were $640,000,000 in 1914; $618,000,000 in 1916; and $590,000,000 in 1917. But by August 1, 1916, the bank had advanced to the state for war purposes $1,600,000,000, and during the subsequent year advanced $500,000,000 more. In addition the bank held treasury bonds representing advances to foreign governments of $244,000,000 on August 1, 1916, and of $550,000,000 on August 1, 1917. Its deposits more than doubled, being $260,000,000 in 1914 and $535,000,000 in 1917. At the same time, however, its note circulation trebled, being $1,355,000,000 on August 1, 1914; $3,200,000,000 in 1916; and $4,000,000,000 in 1917. This enormous increase in note circulation was much greater than in either England or Germany but less than in Russia. Bank of France notes have long been the popular currency in that country and this great expansion of the bank's credit reflected the strong place it holds in the confidence of the French people.

Little could be learned of banking conditions in Germany. The statement of the Imperial Bank showed that its gold coin and bullion rose from $338,000,000 in 1914 to $615,000,000 in 1915, but fell to $600,000,000 on August 1, 1917. Its discounts and loans rose from $200,000,000 in 1914, to $1,635,000,000 in 1916, and to $2,780,000,000 in 1917. Deposits amounted on August 1, 1914, to $235,000,000; in 1916, $595,000,000; and 1917, $1,460,000,000. Its bank-note circulation was only $470,000,000 in August, 1914; two years later it was $1,755,000,000; and August 1, 1917, $2,210,000,000. In August, 1914, the bank held treasury notes of only $21,000,000; two years later it held treasury notes and loan bank notes aggregating $240,000,000; but on August 1, 1917, such notes amounted to $1,220,000,000. Thus there was an expansion of liabilities measured in terms of deposits and note circulation from $705,000,000 in 1914 to $3,670,000,000 in 1917.

The State Bank of Russia held gold coin and bullion on August 1, 1914, of $800,000,000 and gold abroad of $70,000,000. Two years later its gold in vault was $775,000,000 while that held abroad aggregated $980,000,000; and in August, 1917, it held in vault $645,000,000, and abroad $1,150,000,000. Its loans in 1914 aggregated $380,000,000; two years later $2,440,000,000; and in August, 1917, $6,620,000,000. This enormous expansion of loans was due almost entirely to loans against short-term obligations of the Public Treasury. These loans amounted to $5,880,000,000 in August, 1917. In addition, $150,000,000 represented loans extending on account of merchandising operations of the Treasury. The deposits increased from $530,000,000 in 1914 to $980,000,000 in 1916, and to $1,650,000,000 in 1917. Nearly all of this increase in deposits was credited to the current accounts of persons and institutions. The bank note circulation increased amazingly. In August, 1914, it aggregated $815,000,000; in August, 1915, $1,915,000,000; in August, 1916, $3,438,000,000; and in August, 1917, $7,060,000,000. There was thus a total increase of resources and liabilities from $2,690,000,000 in 1914 to $4,600,000,000 in 1916, and to $9,480,000,000 in 1917. In addition to the foregoing the Bank held in 1915, $3,370,000,000 of deposits on trust; these had increased in August, 1917, to $5,450,000,000.

Some light is thrown upon the condition of credit in Russia by the fact that in August, 1915, 1916, and 1917 the rate of discount on bills up to three months was uniformly 6 per cent; on the same dates the discount rate on bills up to six months was 6½ per cent; the interest on loans against merchandise was 6 to 7 per cent, while the interest on loans against interest-bearing securities was 6½ to 7 per cent in 1915 and 1916, and ranged from 5½ to 7 per cent in 1917.

A large part of the increase of note circulation of the Bank of Russia has been due to the chaotic state of trade which has interfered with the collection of revenues and the orderly flotation of loans and made the Bank a chief reliance in supporting the operations of government.

Among the notable effects of the war on foreign banking and currency systems as indicated above were the changes in the ratio of gold reserve to note issues and the astonishing expansion of the latter.

The following table shows the percentage of gold held against circulating notes for twelve principal banks at the close of July, 1914, 1916, and 1917:

	1914	*1916*	*1917*
Bank of England	75.3	61.1	61.5
Bank of France	71.3	30.4	27.5
State Bank of Russia	102.6	22.8	12.7
Bank of Italy	56.4	80.7	21.3
German Reichsbank	52.5	34.7	31.4
Bank of Netherlands	54.8	84.7	82.8
Riksbank, Sweden	48.0	...	44.2
Norges Bank, Norway	43.9	49.5	44.2
Nat. Bank of Copenhagen, Denmark	61.7	59.5	64.8
Bank of Spain	66.5	85.4	93.4
Swiss National Bank	46.2	80.5	72.6
Bank of Japan	61.1	75.5	94.5

The total liabilities of these twelve foreign banks had trebled, increasing from $7,233,000,000 in 1914 to $21,125,000,000 in 1917. Their deposits, however, had increased similarly, or from $1,864,000,000 in 1914 to $5,238,000,000 in 1917. The following table shows this expansion of deposits.

		1914	*1917*
Bank of England	Gov.	$61,869,000	$226,850,000
	other	264,830,000	617,267,000
Bank of France	Gov.	73,834,000	13,518,000
	other	182,881,000	477,954,000
Russian State Bank	Gov.	264,937,000	144,825,000
	other	327,585,000	1,445,527,000
Bank of Italy	Gov.	40,820,000	43,238,000
	other	118,035,000	558,902,000
German Reichsbank		299,515,000	1,146,278,000
Bank of Netherlands		1,904,000	21,186,000
Riksbank, Sweden		18,440,000	31,111,000
Norges Bank, Norway		3,859,000	38,548,000
Nat. Bank, Copenhagen		5,496,000	19,442,000
Bank of Spain		96,931,000	197,432,000
Swiss National Bank		28,819,000	19,854,000
Bank of Japan	Gov.	69,230,000	254,585,000
	other	5,714,000	10,918,000
Total—twelve banks		$1,864,199,000	$5,237,333,000

REFERENCES. R. W. Babson and R. May, *Commercial Paper* (2nd edition); M. B. Foster, *Banking;* H. G. Moulton, *Principles of Banking;* E. L. S. Patterson, *Domestic and Foreign Exchange;* H. W. Wolff, *Coöperative Credit in the United States;* and H. P. Willis, "What Federal Reserve System Has Done," in *American Economic Review;* J. A. Todd, *Mechanism of Exchange;* O. H. Wolfe, *Practical Banking;* Appleton's *Bankers' Practical Library,* in thirteen volumes.

BAPAUME. A city in France. See WAR OF THE NATIONS, *Military Operations* (5).

BAPTISTS. According to official statements there were in the United States in 1916, 6,107,686 members of this denomination as compared with 5,932,364 in 1915. The total number in the world in 1916 was 7,200,324, as compared with 7,003,737 in 1915. There were in the United States in 1916, 1986 Baptist associations, 51,248 churches, and 36,926 ministers. The Baptists are divided into two main branches known as the regular Baptists, who include the Northern and Southern Baptists and several smaller branches. The Northern Baptists had in 1916, 1,338,759 members, 8531 ordained ministers, and 9646 churches. The Southern Baptists had, in 1916, 4,744,178 members (these figures include colored Baptists in the South of whom there were 2,150,929), 41,602 churches, and 28,395 ordained ministers. The larger of the smaller denominations are the Primitive Baptists with about 101,500 communicants; the Free Baptists (see below); the Free Will Baptists, with about 60,500 members; and the General Baptists, with about 34,250 communicants.

There are in addition several smaller divisions of the colored Baptists. The general work of the larger denominations is under the supervision of the Northern Baptist Convention and the Southern Baptist Convention. The missionary work of the Northern Baptists is conducted by the American Baptist Foreign Mission Society, the American Baptist Home Mission Society, and the American Baptist Publication Society. The Southern Baptists have their own agencies. Their foreign missionary work is carried on through the Foreign Mission Board at Richmond, Va., and the home mission work through the Home Mission Board at Atlanta, Ga. The Sunday School and publication work is done through the Sunday School Board at Nashville, Tenn. For foreign missions in 1916 the Baptists contributed $1,211,901, as compared with $1,231,664 in 1915; for home missions, $924,645 in 1916, as compared with $965,698 in 1915; and for State Missions there was contributed $993,180, as compared with $1,059,914 in 1915. The Baptists maintain 14 theological seminaries and have under their control 101 colleges and universities. There were in 1916 43,597 Sunday Schools as compared with 42,769 in 1915; 335,620 officers and teachers in 1916 as compared with 325,475 in 1915; and 3,535,038 Sunday School pupils, as compared with 3,288,902 in 1915. See Baptists, Free.

BAPTISTS, Free. This denomination has been practically united with the regular Baptist denominations. In some States the term United Baptists is used to show the consolidation of the different denominations. The movement towards union was started in 1911, by the transfer of the part of the Free Baptists of their denominational and missionary activities to the three national mission organizations of the Northern Baptists: the American Baptist Foreign Mission Society, the American Baptist Home Mission Society, and the American Baptist Publication Society. No full statistics of the present membership of the denomination are available.

BAR ASSOCIATION, American. The fortieth annual meeting was held at Saratoga Springs, N. Y., on September 4-6, 1917. On Tuesday morning, September 4, Edgar T. Brackett, of Saratoga Springs, made an address of welcome, which was followed by the address of the President of the Association, George Sutherland, of Utah, on "Private Rights and Government Control." On Tuesday evening United States Senator Thomas W. Hardwick, of Georgia, presented a paper on "The Commerce Clause of the Constitution of the United States." On Wednesday, September 5, the session was presided over by Jacob M. Dickinson, of Illinois, and the time was occupied by reports of standing and special committees. At Wednesday evening's session, when Stephen S. Gregory, of Illinois, presided, addresses were delivered by Charles Evans Hughes on "War Powers Under the Constitution," and by Robert McNutt McElvoy, of New Jersey, on "The Representative Idea and the War." On Thursday morning, September 6, William H. Burges, of Illinois, gave an address on "A Hothouse Constitution; Mexico; 1917." On Thursday afternoon, during which Alton B. Parker presided, Maître Gaston de Beval, of the Bar of Brussels, addressed the Association on "Prussian Law as Applied in Belgium," during which the legal aspects of the execution of Edith Cavell, the British nurse, were considered. The annual dinner was held at 7 P. M. The regular business programme of the association was varied by the routine work of different subsidiary and allied bodies of the association, such as the conference of Bar Association delegates, the comparative law bureau, the section of patent, trade-mark, and copyright law, the judicial section, and the national conference of commissioners on uniform State laws. There were 10,885 members of the association in 1917. The officers in the same year were: President, Walter George Smith, of Philadelphia, Pa.; secretary, George Whitelock, Baltimore; treasurer, Frederick E. Wadhams, Albany. The forty-first annual meeting of the association will be held at Cleveland, Ohio, August 28-30, 1918.

BARBADOS. Barbados is a British colony situated in latitude 13° 4′ North and longitude 59° 37′ West, and is the most easterly of the Caribbee Islands. It is nearly 21 miles long by 14 in breadth, and contains an area of 106,470 acres, or about 166 square miles, with a population (1915) of 180,516.

Bridgetown, the chief town and port, is situated in the parish of St. Michael, in latitude 13° 5′ 42″ North and longitude 3° 58′ 29″ West. This town contains, according to the census of 1911, 16,648 inhabitants; Speightstown, the only other town, has about 1500 inhabitants.

	1911-12	*1912-13*	*1914-15*	*1915-16*
	£	£	£	£
Imports	1,465,431	1,353,059	1,300,078	1,270,154
Exports	1,085,569	856,618	915,009	1,053,330
Revenue ...	284,126	214,865	228,091	212,484
Expenditure.	230,339	222,177	236,795	227,009
Shipping * .	3,346,982	3,771,598	3,528,140	3,384,547

* Tonnage entered and cleared.

BARGE CANAL. See Canals.

BARGES. See Canals.

BARLEY. The world produces normally about 1,485,000,000 bushels of barley but in 1917 figures were lacking as to production for many of the more important barley-growing countries, so that trustworthy estimates of the world's crop could not be made. According to data supplied by the International Institute of Agriculture, Rome, the countries of the northern hemisphere, not including Belgium, Denmark, Germany, Austria-Hungary, Russia, Rumania and other Balkan countries, and India, produced 586,260,000 bushels. The crops of the countries of the southern hemisphere which were harvested early in 1917 were given by the same authority as aggregating 8,619,000 bushels. The production of Argentina, owing to drouth and locust injury, was only 2,163,000 bushels which was less than one-half normal.

The United States, which furnishes about one-eighth of the world's barley supply, produced 208,975,000 bushels on 8,835,000 acres. This production was surpassed in 1912 and 1915 but the acreage was the largest ever devoted to the crop. The average yield per acre was 23.7 bushels which was 0.2 of a bushel above that of 1916 but 2.7 bushels under the average acre yield for the five-year period 1911-14. The average farm price on December 1 was 113.7 cents per bushel, the highest on record, and the total value of the crop was $237,539,000 which was also the highest ever reached. The value per acre on this basis was about $26.95 as compared with $20.79 in 1916 when the corresponding price was 88.1 cents per bushel. The average farm value on December 1 had not reached a dollar per bushel since 1868. As in the preceding year the States leading in acreage and production were California, Minnesota, and North Dakota.

The Canadian crop was estimated at 51,684,000 bushels, or greater by 8,914,000 bushels than the year before, and valued at $58,620,000. The total production of the United Kingdom was reported at 60,167,700 bushels, as compared with 54,934,000 bushels in 1916. In every barley-producing country of the world the exports of the crop were subject to regulation which ranged from government supervision and approval to absolute prohibition. In some countries a heavy export duty was imposed. Prices also were fixed by many governments. As instances may be mentioned that the British government in August, 1917, fixed the price at $1.63 per bushel, the French government in October at $1.76, while in Germany the maximum price was placed at $1.71 in March and in Austria at $1.63 in August. These prices were changed from time to time or were based on a sliding scale.

BARLOW, Jane. An Irish novelist, died April 17, 1917. The daughter of J. W. Barlow, vice-provost of Trinity College, Dublin, she was born in 1860 at Clontarf, near Dublin. Her special distinction was as an interpreter of Irish village life. Occasionally she wrote in verse. Dublin University gave her an honorary degree of doctor of letters. Among the books published by Miss Barlow between 1892 and 1913 were: *Bogland Studies, Irish Idylls, Kerrigan's Quality, The End of Elfintown, Maureen's Fairing, Mrs. Martin's Company, Creel of Irish Stories, From the East Unto the West, From the Land of the Shamrock, Ghostbereft and Other Stories, From Beach and Bog Land, Irish Ways, Flaws,* and *Doings and Dealings.*

BARNARD COLLEGE. See Columbia University.

BARNYARD MANURE. See Fertilizers.

BAROTSELAND. See Rhodesia.

BASEBALL. America's national game not only thrived during 1917 despite the war but also added to its popularity. Professional baseball suffered in a sense, for several of the minor leagues were forced to disband before their seasons were completed. The major leagues on the other hand had a fairly prosperous year. The attendance at the games in the large cities fell off somewhat during the latter part of the summer but this was probably as much due to the one-sided pennant races as to any other cause.

The world championship contests in October witnessed a return to the usual conditions as far as the fan was concerned for in only one former year did the attendance and receipts reach higher figures than in 1917.

The majority of the leading colleges cancelled their schedules when they saw their star players deserting the campus for the camp but the smaller institutions of learning continued their usual activities on the diamond. As a result of the war, baseball was carried to England and France by every transport that sailed from American shores. The Canadian soldiers had already been playing the game both in England and behind the trenches in Flanders and France and the United States troops and ambulance units gave the pastime another boost "over there."

Organized baseball in the United States responded most generously to the call of the national government for aid in the promotion of the war. Of the 300 major league players, seventy-five had joined the colors by the close of the year. The first recognized star of the game to enter the military service was Hank Gowdy, the brilliant catcher of the Boston Braves. Gowdy enlisted at the height of the baseball season and is now with his regiment in France.

The American League officials won well-merited praise by their stand. Chiefly through the efforts of Capt. T. L. Huston, part owner of the New York American League Club, military training was adopted by each of the clubs in the organization. The national government furnished each team with an officer to direct the drilling which soon became a feature of practically every game.

Captain Huston, not content with this excellent service, left his club in mid-season and organized a regiment of engineers under the direction of the government, and his command was among the first to be sent to the French front to perform the engineering work necessary before the advent of U. S. troops.

Clarke Griffith, manager of the Washington American League Club, recognizing the demand for baseball paraphernalia among the soldiers and sailors, both in the United States and in Europe, initiated a movement which resulted in the collection of thousands of dollars. Entire companies were fitted out with baseball bats, balls, gloves, etc., by means of this fund.

The New York Giants won the National League pennant in fairly easy fashion while the Chicago White Sox captured the American League honors after a keen struggle with the Boston Red Sox, world champions in 1916, the Detroit Tigers, and the Cleveland Indians. In the contest for the world championship the White Sox were successful, winning four of the six games played.

This was the first time that New York and Chicago teams had been contenders in the baseball classic but the games did not attract such large crowds as had been expected. The total attendance (paid admissions) was 186,654 and the total receipts, $425,878. The players on the winning team each received $3528.13 and the losers, $2548.14.

The series opened in Chicago on October 6, the White Sox winning by a score of 2 to 1. Cicotte and Schalk were the battery for Chicago, while Sallee and McCarty were in the points for New York. Each team made seven hits and one error. The scores of the other games follow:

October 7—White Sox, 7 runs, 14 hits, 1 error; Giants, 2 runs, 8 hits, 1 error. Batteries, Faber and Schalk; Schupp, Anderson, Perritt, Tesreau, McCarty, and Rariden.

October 10—Giants, 2 runs, 8 hits, 2 errors; White Sox, 0 runs, 5 hits, 3 errors. Batteries, Benton and Rariden; Cicotte and Schalk.

October 11—Giants, 5 runs, 10 hits, 1 error; White Sox, 0 runs, 7 hits, 0 errors. Batteries, Schupp and Rariden; Faber, Danforth, and Schalk.

October 13—White Sox, 8 runs, 14 hits, 6 errors; Giants, 5 runs, 12 hits, 3 errors. Batteries, Russell, Cicotte, Williams, Faber, and Schalk; Sallee, Perritt, and Rariden.

October 15—White Sox, 4 runs, 7 hits, 1 error; Giants, 2 runs, 6 hits, 3 errors. Batteries, Faber and Schalk; Benton and Rariden.

According to the composite score, the White Sox outhit the Giants, the percentages being .274 for Chicago and .256 for New York. In fielding the Giants had a slight margin, the figures being .953 for New York and .952 for Chicago.

The playing of Eddie Collins, of the White Sox, at second base, his batting, and his base-running stood out most prominently throughout the entire series. Collins handled thirty-four chances in the field without making an error, batted for an average of .409, and stole three bases. The most amusing incident of the series occurred in the final game in New York when Heinie Zimmerman, the Giant third baseman, vainly tried to catch Collins in a sprint from third base to the plate. Another White Sox player deserving of mention is Urban Faber, whose steady pitching made the victory of the White Sox possible.

The Giants who distinguished themselves during the series were Rube Benton, Benny Kauff, and Davey Robertson. Benton made the best showing in the box of any of the New York twirlers and, had he received proper support, the outcome might have been different. Kauff made two home runs in one of the games, a feat never before accomplished in the diamond classic. Robertson had the satisfaction of compiling the highest batting average on record. His average with the stick was .500.

The prediction of the experts of the game that the Giants would have little difficulty in winning the pennant were borne out by the result. During the early part of the season Christopher Mathewson's Cincinnati Reds made a spurt which carried them to the top, but they soon dropped back. The Brooklyn Dodgers, winners of the 1916 pennant, made a sorry showing, finishing in seventh place.

The batting honors for the year in the National League went to Eddie Roush, centre fielder of the Cincinnati Reds, whose average was .341. The other leading hitters were: Rogers Hornsby, St. Louis Cardinals, .327; Zack Wheat, Brooklyn Dodgers, .312; Benny Kauff, New York Giants, .308; Heinie Groh, Cincinnati Reds, .304; George Burns, New York Giants, .302. The best team batting was done by the Cincinnati Reds, whose average was .264. The New York Giants were second with .261 and the St. Louis Cardinals third with .250. The New York Giants led the National League in team fielding with a percentage of .9683. The Philadelphia club was second with .9673 and the St. Louis Cardinals third with .9669.

Grover Cleveland Alexander, of the Philadelphia club, was the most effective pitcher in the National League. He won thirty games and allowed the lowest number of earned runs per game. Ferdie Schupp, of the New York Giants, had a higher winning percentage than Alexander, but permitted more runs to the game.

One of the biggest baseball deals ever made was put through in December when the Philadelphia Club sold Alexander and William Killifer, catcher, to the Chicago Cubs for an amount said to have been $50,000.

The pennant race in the American League was much keener than in the National. The Chicago White Sox had considerable trouble shaking off the Boston Red Sox, world champions in 1916, while the Cleveland team also put up a hard fight until the closing weeks of the campaign.

Tyrus Cobb, of the Detroit Tigers, regained his crown as the leading batter in the American League and in all baseball, compiling an average of .383. George Sisler, of the St. Louis Browns, finished second to Cobb with .353 and Tris Speaker, of the Cleveland Indians, winner of the laurels in 1916, was third with .352.

Eddie Cicotte, of the Chicago White Sox, was the premier pitcher of the American League, winning 28 games and losing 13 and at the same time holding his opponents to the lowest number of earned runs per game.

The final standing of the National League club was: New York won 98, lost 56; Philadelphia won 87, lost 65; St. Louis won 82, lost 70; Cincinnati won 78, lost 76; Chicago won 74, lost 80; Boston won 72, lost 81; Brooklyn won 70, lost 81; Pittsburgh won 51, lost 103.

The final standing in the American League was: Chicago won 100, lost 54; Boston won 90, lost 62; Cleveland won 88, lost 66; Detroit won 78, lost 75; Washington won 74, lost 79; New York won 71, lost. 82; St. Louis won 57, lost 97; Philadelphia won 55, lost 98.

The pennant winners in the more important minor leagues were: International, Toronto; American Association, Indianapolis; Pacific Coast, San Francisco; Southern, Atlanta; Central, Grand Rapids; New York State, Wilkes-Barre; Eastern, New Haven.

BASKETBALL. The American intercollegiate basketball championship in 1917 was won by the Yale University team with 9 victories and 1 defeat. Princeton finished second, winning 8 games and losing 2, and Pennsylvania was third with 5 games won and 5 games lost. The record of the other teams was: Dartmouth won 4, lost 6; Columbia won 3, lost 7; Cornell won 1, lost 9. The leading scorer of the year was Kinney, of Yale, who gathered a total of 130 points from 43 field goals and 44 goals from foul.

The universities of Illinois and Minnesota divided the honors in the Western Intercollegiate Conference, each scoring 10 victories as against 2 defeats. Purdue occupied third place, winning 7 games and losing 2. The other teams finished as follows: Wisconsin won 9, lost 3; Indiana won 3, lost 5; Chicago won 4, lost 8; Ohio won 3, lost 9; Northwestern won 2, lost 10; Iowa won 1, lost 8.

Washington State College was the victor in series played by the Pacific Coast Conference Colleges, winning 8 of the 9 games contested. The standing of the other five was: University of California won 5, lost 1; Oregon Agricultural College won 6, lost 7; University of Washington won 5, lost 7; Stanford University won 0, lost 6; University of Oregon won 0, lost 8.

The national Amateur Athletic Union basketball championship games were played at the Second Regiment Armory, Chicago, under the auspices of the Illinois Athletic Club, on March

14, 15, 16, and 17. The series brought into conflict sixteen of the strongest teams in the United States. The Illinois Athletic Club five captured the title through its defeat of the Brigham Young University team. The score was 27 to 14. Montana State College won third place by triumphing over the Seward Park Blues, 16 to 9.

The basketball rules committee of which Dr. Joseph E. Raycroft, of Princeton University, is chairman, made only one change in the playing regulations. This rule provides that the entire background of the court shall be regarded as within bounds, thereby giving the player an additional leeway of two feet under the basket. The change was made because of the fact that a player has often been deprived of a well-earned field goal by what might be properly termed the technicality of being out of bounds.

BASSERMAN, Ernst. A German statesman, died at Baden-Baden, July 25, 1917. He was born in 1854 and after entering political life served as a member of the Reichstag for many years. He was leader of the National Liberals, and from the beginning of the European War in 1914 supported the most aggressive methods of carrying on the conflict. He was particularly hostile to the British, emphasizing the necessity of fighting them until defeated, advocating for that purpose the unsparing use of submarines and the bombarding of open towns by Zeppelins. He opposed the peace resolution made by Matthias Erzburger before the Chief Committee of the Reichstag on July 7, 1917. Basserman was a firm friend of Admiral von Tirpitz and supported his war policy.

BATEMAN, Kate Josephine. An American actress, died in London, April 9, 1917. She inherited her talent for the stage, for her father, Colonel H. L. Bateman, was an actor, theatrical manager, and playwright; her mother was an actress. She was born in 1842 in Baltimore, Md., and made her début, as a child, in *The Babes in the Wood.* A few years later she appeared in New York and London in *Richard III* and in *Evangeline.* Perhaps she was best known for her Shakespearean rôles, which included Portia, Juliet, and Lady Macbeth. One of her greatest successes was gained in *Leah the Forsaken* and another in *Medea.* After her marriage to George Crowe, former editor of the London *Daily News,* in 1866, she left the stage temporarily. In *Macbeth* she appeared with Henry Irving, who was a "discovery" of her father's. In 1892 she founded a school of acting in London. She was last seen in *The Younger Generation* in 1912.

BATTLE CRUISERS. See Battleships and other War Vessels; Naval Progress.

BATTLESHIPS and other War Vessels. At the end of 1917 the tendency of warship construction was still in the general direction of increase of size in order to obtain improved offensive and defensive qualities, but in vessels of the light cruiser, destroyer, and submarine type the movement, exhibited in the past three or four years, towards separation into two or more classes of different size and attributes was becoming more marked.

Battleships. In all navies, each battleship of new type laid down in 1917 was larger than its predecessors. According to reports from Germany late in 1916 plans had been prepared for two battleships. They were to have triple bottoms, the outer one armored to a thickness of eight inches abreast boilers and engines. The armament was to consist of eight 16-inch guns and the speed to be 25 knots. No mention was made of the displacement except that it would be considerably greater than that of previous ships. Whether any such vessels actually were commenced was unknown at the end of the year. The new Japanese battleships, one laid down in 1916 and one in 1917, were of 32,000 tons, 1200 tons larger than the ships of the *Hiuga* class which preceded them. But the greatest increase in size was made in the new U. S. battleships of the 1917 programme. These were of 42,600 tons, 10,000 tons larger than any which had preceded them in any navy. They were to be heavily armored, carry 12 16-inch guns, and have a speed of 23 knots.

Battle Cruisers. According to German reports, the new British battle cruisers completed in 1917 were of 30,000 tons, 32 knots speed, and were armed with 8 16-inch guns. These details were not confirmed from British sources. The new U. S. battle cruisers were of 34,800 tons, 35 knots speed and carried 10 14-inch guns. A new German battle cruiser while on her trial trip in 1917 was badly injured by striking a mine. Others were reported to be building and their armament, speed, and armor was said to be greater than those of previous ships of their class, but details were lacking.

Light Cruisers. The new light cruisers of 7100 tons and 35 knots speed which were building for the United States navy were the largest of their class although Japan had laid down one of about the same size in 1917. The displacement of British light cruisers grew steadily from 2700 tons in 1904 to 5400 tons in 1912. In that year a new 30-knot, 3600-ton class appeared and the vessels proved to be so successful that, with some changes in the battery (the new ones carried 6 6-inch guns), a large number (perhaps 20) were later built. Realizing the importance of the class for operations with and against destroyers, Japan laid down a similar vessel in 1917 and expected to follow it with others. Since the war began, Germany had built several light cruisers and was reported to have others under construction. Their details were unknown at the end of 1917. All the earlier cruisers were armed with 10 or 12 4.1-inch guns. The ease and dispatch by which they were sunk by British cruisers carrying 6-inch guns may have led the Germans to the mounting of larger guns on the new craft. The latest French light cruisers were of 4500 tons, carried 8 5.5-inch guns, and had a speed of about 30 knots. Three had been completed and it is possible that others were building.

Destroyers. The destroyers building in 1917 were of three types—the flotilla leader of 1500 to 2000 tons, the heavily armed fast destroyer of 1100 to 1300 tons, and the light destroyer of 600 to 800 tons. The average tonnage of the new boats was about 1100 because the United States was building several hundred destroyers, most of which were commenced in 1917. All were said to be of the same type—1085 tons, 35 knots speed, 4 4-inch guns, 4 triple torpedo tubes—though it was possible that some flotilla leaders had been laid down. The new German destroyers which were completed in 1917 were of about 1200 tons and carried 3 4.1-inch guns. A larger type, reported as having a displacement of 1500 tons and carrying 5.9-inch guns, was said to be in hand, but the correctness of the report was doubtful. No destroyer of high speed could carry an ordinary 6-inch gun or withstand the shock of its discharge. If 5.9-inch guns are mounted they must be short, light, and of low velocity. Such a piece might be exceedingly useful at close quarters. Many flotilla leaders of about 1900 tons were built for the British navy since the war began and others were said to be in hand at the end of 1917. In addition to acting as flag-boats they were used as scouts and skirmishers to drive in the enemy's smaller craft. Two British leaders defeated a squadron of six German boats of recent type, destroying two and compelling the others to flee. See Naval Progress; Submarine Operations; Submarines.

BAVARIA. A European kingdom, in area and population the second of the states composing the German Empire, Prussia being first. The capitol is Munich. Below are shown the area and the population according to the census of December 1, 1910, as compared with that of December 1, 1890:

		Population	
	Sq. miles	*1890*	*1910*
Bavaria proper	27,004.7	4,866,643	5,950,206
Palatinate	2,289.8	728,339	937,085
Total	29,293.5	5,594,982	6,887,291

Bavaria covers about 14.0 per cent of the area of the German Empire and had in 1910 about 10.6 per cent of the population. Its area is about one-half that of the State of Georgia. In 1816 Bavaria had 3,607,000 inhabitants; in 1864, 4,775,000; in 1900, 6,176,057. The average annual increase from 1816 to 1910 was 0.69 per cent; from 1900 to 1910, 1.09 per cent. In 1910, communes having 2000 inhabitants or more aggregated a population of 3,079,022. Roman Catholics numbered 4,863,251 (70.61 per cent); Evangelicals, 1,942,658 (28.21 per cent); other Christians, 13,963 (0.20 per cent); Jews, 55,065 (0.80 per cent).

Bavaria has a bicameral parliament. The lower house consists of 163 members elected for six years by direct vote. The king in 1917 was Ludwig III, born Jan. 7, 1845. He became regent in succession to his father, Prince Luitpold, who died December 12, 1912, and was proclaimed king, November 5, 1913, in succession to his cousin, King Otto (died October 12, 1916) who had long been mentally incapable.

BEAR ISLAND. See Polar Research.

BEAUX-ARTS INSTITUTE OF DESIGN. An organization incorporated in 1916 to carry on and develop the courses in design hitherto conducted by the Society of Beaux Arts Architects. With the society it was housed in its own building at 126 East Seventy-fifth Street, New York City. It offered three courses: Architectural Design; Sculpture, including Architectural Ornament; and Mural Painting. In the instruction given in these courses, the Institute had associated with itself the Society of Beaux Arts Architects, the National Sculpture Society, and the Society of Mural Painters, from which societies it drew instructors who gave their services gratuitously. There were no fees of any kind excepting a registration fee of $2.00 per annum for the course in Architectural Design. The Atelier System, resembling closely that of the Ecole des Beaux Arts of Paris was adopted in each department. There were 111 architectural ateliers in correspondence situated in 90 different cities of the United States and Canada, aggregating 774 registered students. It had 316 students registered in the Sculpture Department, working in its own building. Circulars of information concerning the different courses will be mailed on application. The object of the Institute and the Society was to perpetuate the principles and associations of the Ecole des Beaux Arts in Paris. The officers of the Institute in 1917 were: Thomas Hastings, chairman of the Board of Trustees; William Lawrence Bottomley, secretary; Lloyd Warren, treasurer and director of the Institute.

BECKWITH, James Carroll. An American portrait and genre painter, died October 24, 1917. He was born in Hannibal, Mo., September 23, 1852, and studied painting in Chicago, New York, and with Carolus Duran and Yvonne in Paris in 1873-78. Returning to New York in 1878 he was soon after elected a member of the Society of American Artists and in 1894 was elected to the National Academy of Design. He was for eighteen years professor at the Art Students' League, New York, and was elected a member of the National Institute of Arts and Letters. A fine example of his decorative ability was seen in his work on one of the domes of the Manufacturers' Building at the Chicago Exposition of 1893, but portraiture occupied his chief attention. His best known portraits include those of Mark Twain, Colonel Appleton, Judge Palmer, General Schofield, and the Ogden and Parish families. He had a notable exhibit at the World's Fair at St. Louis in 1904, including "The Nautilus" and portraits of Mrs. Beckwith and F. H. Hitch; in 1905 he produced several portraits, including that of Richard H. Ewart. He also exhibited portraits of Col. Charles Henry Jones (1906), Harold de Raasloff (1909), and "The Veil" (1912). The Military Academy at West Point, and Yale and Johns Hopkins Universities possess portraits painted by him. A fine collection of his crayon and pencil drawings is in the New York Public Library.

BEEF. See Stock Raising and Meat Production.

BEER. See Food Control; Liquors.

BEES. See Entomology.

BEET SUGAR. See Sugar.

BEHRING, Emil Adolph von. A famous German bacteriologist, died at Marburg, April 1, 1917. He was born March 15, 1854, at Hansdorf, Prussia, studied medicine in Berlin, and for a time was an army surgeon. He and Ehrlich have been called "twin sons of science and humanity" (they were born within a day of each other). Both became assistants to Koch in the Institute for Infectious Diseases, one in 1890 and the other in 1891. Koch set Behring, who had already studied questions relating to immunity to disease, to the investigation of disinfectants, but he found that any disinfectant strong enough to affect bacteria through their protecting membrane would first injure the tissue cells beyond repair. He therefore returned to the study of bacterial toxins.

"He soon succeeded," says the *Journal* of the American Medical Association (April 7, 1917), "in immunizing animals with attenuated bacterial toxins against diphtheria and tetanus, and announced in 1890 that immunity is a humoral process, due to some newly acquired specific antitoxic power developed by the blood serum." This discovery led to the actual production of diphtheria antitoxin, to which Ehrlich contributed. In 1894 Behring accepted the chair of hygiene at Halle, but after 1895 he was identified with Marburg, where he had charge of the institute for hygienic research, with its medical farm. To the latter he gave most of what he received in prizes. In 1901, at the first distribution of the Nobel prizes, he received that in medicine. He had previously received, with Roux of the Pasteur Institute, a prize of $5000 from the Paris Academy of Medicine, and $10,000 came to him from the French Academy of Sciences. He was appointed a member of the Prussian Privy Council and was given a title of nobility. In later years he devoted much attention to tuberculosis, the result of which was a bovivaccine that rendered cattle immune, a triumph in its field which it was hoped would lead to the discovery of a vaccine for man. When Behring returned to the field of diphtheria, "he developed a means of inoculating against this disease. By injecting a practically balanced mixture of diphtheria toxin and antitoxin, the human body proceeds to elaborate its own antitoxin. He found that the serum from persons thus actively immunized might be used for curative and preventive purposes. He hoped by this means to vaccinate people against diphtheria so that in time diphtheria would be exterminated as completely as smallpox now is." (*Journal* of the American Medical Association, April 7, 1917). His publications included *Die Blutserumtherapie* (1892), *Bekämpfung der Infektionskrankheiten* (1894), and *Beiträgen zur experimentellen Therapie* (1900).

BELGIAN CONGO. See CONGO, BELGIAN.

BELGIAN RELIEF COMMISSION. See RELIEF FOR WAR VICTIMS.

BELGIUM. A kingdom of central Europe, anciently inhabited by the Belgæ (a Celtic-speaking Germaine tribe), and part of the Gallia Belgica of the Romans. In 1815 the country was joined to the kingdom of the Netherlands, but recovered its independence by the revolution of 1830. By the constitution of 1831 it was declared a constitutional, representative, hereditary monarchy, and on June 4, 1831, Prince Leopold of Saxe-Coburg was chosen hereditary king. By the treaty of London, 1831, signed by Great Britain, France, Austria, Prussia, and Russia, Belgium's neutrality was guaranteed; and during the Franco-Prussian War of 1870 her neutrality was rigidly observed by the belligerent Powers. But upon Sir Edward Gray's inquiry, July 31, 1914, concerning the attitude of the European Powers towards this question, while France immediately affirmed her intention to adhere to her guarantee, Germany returned evasive answers. An ultimatum sent to Germany failing to elicit the required assurance that the neutrality of Belgium would be respected, upon information, August 4, 1914, that Belgian territory had been invaded, Great Britain entered the war. The Germans at present occupy the country and have established a civil government there. The Belgian government has removed its seat temporarily to Le Havre, France. An estimate purporting to be authentic reports that the Germans succeeded in occupying 11,130 square miles, or more than 97 per cent of the total area of Belgium. They now hold approximately 11,008 square miles, or 96 per cent of the total. A little over 1 per cent of the Belgian territory which the Germans held before the battle of the Marne is therefore all that has been recovered from them.

AREA, POPULATION, ETC. Belgium has a frontier of 831 miles, and is bounded on the north and east by the Netherlands (268 miles), on the south and west by France (381 miles), on the east by Germany (60 miles) and the Grand Duchy of Luxemburg (80 miles), with a seaboard of 42 miles. The Meuse and its tributary, the Sambre, divide it into two distinct regions; that in the west being generally level and fertile, while the table-land of the Ardennes, in the east, has for the most part a poor soil. Its great harbor and commercial entrepôt is Antwerp, a strongly fortified city on the Schelde. The other harbors are Ostend, Nieuport, Blankenberg, and Zeebrugge.

Few of Belgium's thriving towns in the path of the German invasion have suffered more than has Ypres, situated on the Yperlee River (a tributary of the Yser), about 35 miles south of Ostend. The inhabitants (about 17,000) were among the first victims, as the Germans occupied the town October 3, 1914. They were driven out before the end of the year by the British who continued to hold this section of the line. Mons, a manufacturing and trade centre of about 30,000 inhabitants, the centre of a rich coal region and the capital of Hainaut, was the scene of the battle which preceded the Anglo-French retreat ending on the banks of the Marne. A recent order from German headquarters gave instructions for the deportation of its citizens. Zeebrugge, the seaport of Bruges, lies 15 miles north of Ostend and 60 northwest of Brussels. A prosperous city of 50,000 people before the war, it has served the Germans as a submarine base and has been in that capacity the objective of Allied airplane raids. Should the Allies win control of the coast of Belgium as far inland as Bruges, they would not only hamper the enemy's submarine operations but would themselves come into possession of a splendid system of canals extending from France to Furnes, and thence by way of Nieuport to Ostend and Bruges. There is also a canal from Bruges to the coast near Blankenberg, another to Ghent, and a third to the waterway connecting Heyst with Ghent. A railroad parallels the coast from the French border to the Dutch frontier.

Large numbers of the civil population, both male and female, having been deported and others murdered by the German invaders, in addition to losses in the army on the field of battle, only the antebellum population can be given. In the following table will be seen the area by provinces in square kilometres, the population for 1912 and that for 1831:

	Sq. km.	*1912*	*1831*
Antwerp	2,832	1,004,909	349,942
Brabant	3,283	1,522,941	561,828
West Flanders....	3,234	884,777	608,226
East Flanders.....	3,000	1,134,079	742,973
Hainaut	3,722	1,247,042	613,179

	Sq. km.	*1912*	*1831*
Liége	2,895	896,649	375,030
Limburg	2,408	284,171	160,090
Luxemburg	4,418	232,500	160,762
Namur	3,660	364,319	218,784
Total Belg.	29,451 *	7,571,387	3,785,814

* 11,371 square miles.

A report comes from Amsterdam to the effect that the German governor-general is to divide that country's ministries of agriculture, industry, art and science, and labor into Flemish and Walloon ministries. In point of population the Walloon district of Belgium is considerably smaller than the Flemish, the latest census showing some three million Walloons and four million Flemings, but in area the Walloons have a slight advantage. The advantage in population grows out of the fact that three of the four largest cities—Brussels, Antwerp, Ghent—are in Flemish territory, while Liége alone lies south of the imaginary boundary line running in a southwesterly direction from Aix-la-Chapelle (Aachen) to Lille. The term "Walloons" is used to designate those Belgians who speak French or a French dialect, while the Flemings are those who speak Dutch or a Dutch dialect. The Walloons are in the main confined to Hainaut, Namur, Liége, Luxemburg, and a part of Brabant.

Of the total population in 1910 (7,423,784), 2,833,334 spoke French only, 3,220,662 Flemish only, 31,413 German only, 871,288 French and Flemish, 74,993 French and German, 8652 Flemish and German, and 52,547 all three languages. The four cities of Antwerp, Brussels, Ghent, and Liége, with their environs, contained 21.16 per cent of the population of the kingdom; but the appearance of urbanization induced by these figures is offset by the fact that the dependent communes cover areas with boundaries widely separated from the urban centres; within these confines are areas devoted to agriculture.

Almost the entire population is of the Roman Catholic faith, but full religious liberty prevails, and grants are made from the national treasury to all denominations. Primary education is compulsory, the cost falling on the communes, with subsidies from the state and the provinces. The high branches of education are well provided for. Education is very largely under clerical control, which is a great grievance from the liberal and socialist point of view.

PRODUCTION AND COMMERCE. The north is mainly agricultural, the south industrial. The success of the manufacturing industries of the country is attributed in part to an abundance of cheap fuel easily accessible, in part to the high standard of technical education prevailing. Agriculture, mining, iron-, sugar-, and textile-manufacturing are the chief occupations; and textiles, sugar, machinery, and agricultural products are the chief exports. Raw materials are admitted free of duty, but there are small duties on manufactured goods imported. An agricultural commission exists in each province and a special council advises the government as to the best means of promoting the various national industries. The total length of the canals and navigable waterways of the country is 1350 miles, 85 per cent of which are under the direct control of the state, and the cheap transport thus rendered possible gives to all industries an incalculable advantage.

A new ministry, to be known as the Ministry for Economic Affairs, was created for Belgium in 1917. The portfolio was held by M. Paul Hymans, leader of the Liberal party, minister of state, and formerly Belgian minister in London. The department was to be assisted by an advisory council composed of some fifty prominent Belgians connected with the industrial and commercial life of their country. The duties of the new department were to consist in making preparations for the restoration and reconstruction of Belgium after the war. Since, to quote Mr. Brand Whitlock, the Germans had carried off everything in Belgium from the machines in factories and the belting to the kitchen utensils and the brass knockers on the doors of private houses, the country at the end of the war would be stripped literally bare of every tool and article needful in the mechanical, industrial, and domestic arts, and to supply this need would require unprecedented commercial transactions.

No returns for production are available since the German occupation. A British publication gives total imports for 1913 (special trade) at £183,345,000 and total exports at £143,073,000; for the first six months of 1914, at £92,126,000 and £74,159,000 respectively. A record of trade with the United Kingdom in 1915 shows imports into Belgium valued at £255,581 and exports to the United Kingdom valued at £1,291,766. Details of the 1912 and 1913 trade will be found in the 1916 YEAR BOOK.

FINANCE AND GOVERNMENT. The 1914 revenue amounted to 807,314,000 francs and the expenditure to 806,754,000. The debt stood January 1, 1914, at 3,743,027,438 francs, of which 3,523,067,806 francs loans at 3 per cent, and 219,959,632 francs share of the Netherlands debt at 2½ per cent. The report of the governor-general appointed by the usurping power estimates the revenue for 1916 at 248,649,935 francs and the expenditure at 274,480,435 francs.

The king of the Belgians is Albert, born April 8, 1875; succeeded his uncle, Leopold II, December 17, 1909; married, October, 1900, the Duchess Elizabeth of Bavaria, and has issue two sons, the heir apparent and Charles Theodore, born October 10, 1903; and a daughter, Marie-José, born August 4, 1906. Heir apparent, Prince Leopold, Duke of Brabant, born November 3, 1901. King Leopold II was born at Brussels, April 9, 1835, and was the son of King Leopold I, whom he succeeded December 10,.1865. He married, in 1853, the Archduchess Maria of Austria, who died September 19, 1902, and by whom he had three daughters. The eldest, Princess Louise, married in 1875 Prince Philip of Saxe-Coburg-Gotha, but the marriage was dissolved in January, 1906. The second, Princess Stephanie, widow of the late Crown Prince Rudolf of Austria, married Count Lonyay in 1899. King Albert is the second son of the late Count of Flanders, brother of Leopold II.

The French Chamber of Commerce stated that "the last reports received at Havre by the Belgian government show that Germany is requisitioning the great factories and mills of Belgium and northern France and systematically despoiling the manufactures of those countries, which were so flourishing before the war." Factories have been requisitioned to turn out munitions for the German armies, the statement continued. Wire mills are turning out barbed wire, while thousands of French workmen are forced in the Longwy-Bas district, under the guard of troops, to turn out iron cinder, of which 600,000 tons already have been produced. Electric current for a part of the western front is being supplied by a 7200-horsepower turbine, which the Germans have installed in a Loos factory. In addition to carrying into Germany all church bells and other bronze materials, the Germans "during the last three or four months have sent trains of ten to fifteen trucks loaded with agricultural machinery from the north of France through Belgium to Germany. The slag heaps of all the blast furnaces in Belgium have been cleared away and sent to the front, and at Malcour the German authorities have had the greater part of the railway and joinery shops destroyed. In most of the large factories Germans are destroying the machinery and sending the spoils across the Rhine. Pieces of machinery which cannot be used are broken up for shrapnel."

HISTORY

On January 10 the Belgian government gave its entire support to the response of the Allies to President Wilson's note on the terms of peace, and in addition declared its gratitude to the United States for the services rendered by the latter to the population of invaded Belgium. It was announced on February 9 that the Germans were building a large number of railways in Belgian Ardennes. In May Baron von Falkenhausen, the successor of von Bissing as governor-general, levied, in addition to the existing war tax of 50,000,000 francs a month, a supplementary war contribution of 10,000,000 francs. An important feature of his administration was its adherence to the policy of separating the Walloon from the Flemish districts. Each had a separate administration.

DEPORTATIONS. The protests against German methods in Belgium particularly in the matter of deportations continued in January. The Dutch government's protests against the practice brought from the German authorities on January 12 a permission for those Belgians who had been deported after returning from Holland to leave Germany and such of them as were employed were allowed to go back to Belgium while the unemployed were required to go to Holland. On January 17 a letter from the papal secretary of state to Cardinal Mercier was published showing that the Pope had approached Germany on the subject of the deportations and had directed Cardinal Mercier to do all in his power to help the sufferers. Cardinal Mercier instructed the priests to care for the interests of civilians and to do all they could to aid the families of the deported men. The German defense of her deportation of Belgians was presented to the United States State Department on January 20. According to this the British blockade had paralyzed the industries of Belgium and had made unemployment almost universal. More than a half a million people were dependent upon the public charity and if the 293,000 wives and 612,000 children were added the figures rose to 1,560,000; that is to say, one-fifth of the whole population. The German method according to the document provided them with a welcome means of escaping unemployment or the humiliation of public charity. It defended the course of the military authorities as necessary and as not in violation of the principles of international law and humanity. It concluded with an invitation to the United States to send a member of its embassy in Berlin to visit the persons who had been deported and inform himself about their condition. On January 24 Ambassador Gerard was instructed to accept the German government's offer. On March 15 it was announced that the Emperor had ordered the deportations to be temporarily discontinued and that he had directed the governor-general of Belgium to restore to Belgium those who had been wrongly sent to Germany as unemployed. As to the feeling of the civilian population in Belgium and the difficulties which resulted from the German policy see the article RELIEF FOR WAR VICTIMS.

The other side of the affair was made public on April 8 when the United States State Department gave out hitherto unpublished letters from an official who had investigated conditions in Belgium. The German treatment of the noncombatants was characterized as inhuman. The real reason for deporting the unemployed was said to be because they needed skilled workmen and such workmen were naturally out of employment in Belgium now that her industries were destroyed. The condition in Belgium was described as a reign of terror in the course of which an uninterrupted series of trials of alleged spies was going on, but the chief atrocity was the policy of deportations. Down to January 10, 1917, it was said that nearly 90,000 Belgians had been deported, frequently under the threat of soldiers backed by machine guns. The German contention that the Belgians voluntarily signed contracts, worked for high pay, etc. was declared to be a trick and it was said that the German military authorities tried by force to make the Belgians sign such contracts and only did so by the exercise of extreme brutality. It was said that in order to deceive civilians the Germans divided the Belgian workers into two classes: namely, those who volunteered for forced labor and those who did not. To the former were promised a good salary and the care of their families by Belgian institutions. The others were required to work for thirty pfennigs a day and were told that their families would not be supported. It was charged that brutal methods were employed in order to force men to work. The chief means was starvation. It was said that in Ghent a large number of men had died from the effect of brutal treatment or the conditions under which the work was done. Great numbers of the Belgians who had been returned from Germany were ill or dying. It was said that in no instance had a German promise of liberal pay for volunteers been kept. See WAR OF THE NATIONS.

BELGIUM, COMMISSION FOR RELIEF IN. See RELIEF FOR WAR VICTIMS.

BENCKENDORFF, ALEXANDRE CONSTANTINOVITCH, Count. A Russian diplomat, ambassador to the Court of St. James's from 1903, died January 11, 1917, in London. He belonged to a well-known Roman Catholic family of the Baltic provinces, and was born in 1849. His education was obtained in France and Germany, after which he entered the diplomatic service when 20 year old. For 10 years he left the service, but by 1886 he was first secretary of the embassy at Vienna and from 1897 to 1903 served as

Minister at Copenhagen. Count Benckendorff did much to further Anglo-Russian friendship. Since his coming to London the Anglo-Russian agreement of 1907 relating to respective spheres of influence in Persia was signed, and this led the way to the Triple Entente. The Count, who was especially popular in the English capital, had been made honorary president of the Russo-British Chamber of Commerce, formed shortly before his death to advance the interests of trade between the two countries.

BENEDICT XV, POPE. See ROMAN CATHOLIC CHURCH; WAR OF THE NATIONS, *The Diplomacy of the War*.

BENEFACTIONS. See GIFTS AND BEQUESTS.

BEREA COLLEGE. A co-educational and non-sectarian institution located at Berea, Ky., in the heart of the great mountain region of the South in whose people the College has taken particular interest. Students in the fall of 1917 numbered 1416 and there were 112 members of the faculty. Volumes in the library numbered 34,500. More than a thousand donors in 1917 contributed to an Efficiency Fund (started more than two years previously). In addition there were in 1917 productive funds amounting to $1,500,000, the income from which was about $60,000. Berea College was founded in 1855. President, William G. Scott, Ph.D., D.D., LL.D.

BERMUDA. The "Bermudas" or "Somers' Islands" constitute a British colony; they are a group of about 300 small islands, situated in the western Atlantic Ocean, in lat. 32° 15′ N., and long. 64° 51′ W., about 580 miles to the eastward of Cape Hatteras in North Carolina, the nearest point of the neighboring American continent. The total area is estimated at 19 square miles, with a population (1915) of 20,801. Commerce and finance statistics follow:

	1910	*1912*	*1913*	*1915*
Imports	£517,074	£637,178	£570,575	£579,828
Exports	106,508	116,586	90,695	106,467
Revenue ...	78,593	83,629	80,576	97,643
Expenditure.	68,392	78,210	87,779	107,666
Shipping * ..	688,315	1,273,666	1,255,866	1,748.337

* Tonnage entered and cleared.

BESSARABIA. The southwesternmost government of Russia, extending from Galicia southeasterly to the Black Sea. On the northeast and east it is separated from the Russian governments of Podolia and Kherson by the Dniester River, and on the southwest and west from Moldavia by the Pruth River. On the south it is separated from the Dobruja by the Danube River. The area is stated at 17,143 square miles, which is about equal to the land area of Vermont and Massachusetts combined. Population, 2,686,600, according to the estimate of January 1, 1915. The inhabitants are Moldavians and other Rumanians, Little Russians, Poles, Bulgars, Jews, Armenians, Greeks, and Tatars. More than two million of the people are dependent on agriculture. The capital of Bessarabia is Kishinev, which, before the great war, had an estimated population of 128,700. It was reported, upon its entrance into the war (August, 1916), that Rumania was to receive part of Bessarabia on account of the large Rumanian population there. See RUSSIA, *History*.

BIBLE SOCIETY, AMERICAN. The war had a disturbing effect upon the working of the Society during 1917, but there were also many reasons for encouragement. The reduced income and increased cost of publication produced their inevitable result. According to the report of the Board of Managers for 1917, which gave the latest available statistics in default of an unusually late annual report, the issues of the Bible for 1916 were much less than for the year before. The Bible House issued 2,301,847 in 1916, over 400,000 volumes less than those of the previous year; and the issues in the Foreign Agencies were 2,776,244, or over 1,300,000 less than the previous year. As no report was received in 1917 from certain of the Society's regular correspondents, comparisons could not justly be made concerning the number of their issues. The Society had issued during its one hundred and one years, in America, 73,838,152 volumes of the Scriptures, and in foreign lands, 49,454,207 volumes. The circulation of the Scriptures in the foreign agencies showed a relative decline in 1916, being 3,447,769 volumes as compared with 3,706,112 for the preceding year. The circulation in the home agencies was also less in 1916, being 1,157,217 as compared with 1,184,991 the previous year. The agency among the colored people showed a substantial increase in 1916, being 49,176, the largest in the history of the agency. In order to accomplish this, eleven colporteurs, together with the Agent, visited 319 towns and villages. The territory of the United States was divided into the northwestern, South Atlantic, Western, Pacific, Southwestern, Eastern, Central, and Atlantic agencies. In 1916 there were 1412 workers employed in distributing the Scriptures, 935 in foreign fields and 477 in the home field. In addition to these there were 515 voluntary workers. The revision of the Spanish New Testament for use in Central and South America was completed; but work on the Japanese New Testament was not yet finished. Progress had been made on various other versions of the New Testament for foreign fields. The Society has an annual expenditure of from $600,000 to $800,000, and an endowment that yields about $85,000. The president in 1917 was James Wood of New York; the corresponding secretaries, Rev. Drs. John Fox and William I. Haven; and the treasurer, William Foulke.

BICYCLING. See CYCLING.

BILLIARDS AND POOL. Nathan Hall of Boston, who became a lieutenant in the Army, captured the highest honors in amateur billiards during the year 1917 by winning the national Class A 18.2 balkline tournament played at Boston in March. Hall was undefeated in the six games contested. Second place went to Ledyard Blake, who won 4 games and lost 2. Edward W. Gardner, Eugene L. Milburn, and T. Henry Clarkson were tied for third, each winning 3 games and losing 3. The Class B amateur championship was won by C. E. White, who played 5 games without suffering a defeat. J. Rice was second with 4 victories and 1 defeat, while G. T. Moon, Jr., and C. P. Matthews were tied for third with 3 victories and 2 defeats each. The Class C title went to C. B. Terry.

The three-cushion emblem was much buffeted about during the year. It passed through the hands of George W. Moore to Charles McCourt to Robert L. Cannefax, to Alfredo de Oro. Chesbrough S. Otis was to meet de Oro in a championship contest at Havana in January, 1918. William F. Hoppe set a new world mark at three-cushions when he made an unfinished run of 15 in a 20-point match with Charles Patterson of St. Louis.

William Gershell won the first Poggenburg Memorial balkline handicap with Edward T. Appleby second and F. S. Appleby third.

In professional billiards William F. Hoppe remained king of the balkliners, going through the season without receiving a challenge. Welker Cochran, a young player from Chicago, by his wonderful showing throughout the year, gave promise of making Hoppe extend himself to defend his laurels after the former has obtained a bit more experience.

J. Howard Shoemaker of New York retained the amateur pocket billiard (pool) championship for the fifth successive year. Edward F. Raynolds and William A. Tilt were tied for second place in this tournament.

Frank Taberski successfully defended his title of professional pocket billiard champion by defeating James Maturo, Benjamin Allen, Louis Kreuter, Lawrence Stoutenburgh, and Joseph Concannon.

BIOGRAPHY. See French Literature: German Literature; Literature, English and American.

BIOLOGICAL CHEMISTRY. See Chemistry.

BIOLOGY. See Botany; Zöology.

BIPLANES. See Aëronautics.

BIRDS. See Ornithology.

BIRTH CONTROL. Beginning in 1914 an active propaganda for the spread of knowledge of birth control has repeatedly claimed the attention of a wide public. The most conspicuous cases were those of Mrs. Margaret Sanger and her sister, Mrs. Ethel Byrne, who established a birth control clinic in a thickly populated district of Brooklyn, N. Y. They were arrested on indictments obtained under a section of the New York penal code which forbade the dissemination by any means whatever of knowledge regarding contraconceptives. Their plan had been to instruct Jewish mothers in methods of control at a nominal charge of ten cents for registration in their clinic. Their registration clerk, Fania Mindell, was also arrested. The latter was convicted of having sold a book entitled *What Every Girl Should Know* and was fined $50. Mrs. Byrne was convicted on January 22 and sentenced to the workhouse for 30 days. She entered upon a "hunger strike"; after three days she was forcibly fed and after nine days she was pardoned by Governor Whitman on the understanding that she would thereafter discontinue her dissemination of forbidden information. The Governor's action was in consequence of nation-wide publicity and a special petition signed by many women. At the trial of Mrs. Sanger it could not be shown that she either sold contraceptives or literature on birth control; moreover her attorney asked for a dismissal of the case on the ground that the law was unconstitutional. She was, however, judged guilty and sentenced to 30 days in the workhouse.

At Chicago a Citizens' Committee on Family Limitation was formed in the spring by an interested group of university professors, physicians, lawyers, social workers, and their wives. They first obtained from the Attorney-General of the state an opinion regarding the legality of the dissemination of knowledge of control methods. Their plan was to hold public meetings calling attention to the importance of the problem but to disseminate scientific information only in private interviews. It was the opinion of the Attorney-General that in Illinois there was no statute similar to that in New York penalizing the giving of any advice or information on the subject, but that the matter was largely discretionary with physicians who might give such advice as in their judgment was advantageous to the physical health and welfare of mothers. The committee thereafter sent a statement of principles to the papers signed by seventeen prominent physicians, lawyers, ministers and others and began the formation of clinics. Subsequently there was introduced into the Illinois legislature a bill sponsored by a Catholic member, imposing restrictions as drastic as those of the New York law upon dissemination of information.

Consequent upon the publicity achieved by the Pittsburgh Birth Control League and similar agitation in other Pennsylvania cities there was introduced in the Pennsylvania legislature a bill providing a penalty of not less than $250 and imprisonment for not less than three months for "any person who shall disseminate or impart or attempt to disseminate or impart information or knowledge tending to interfere with or diminish the birth of human beings" either orally or in writing or by printed matter. This was subsequently passed by the legislature but vetoed by Governor Brumbaugh, who in a long message declared that if enacted such a law would be "more honored in its breach than in its observance." In many cities there were agitation and repeated thrusting of the matter upon public consciousness. In Cleveland, Mrs. R. D. Mitchell was arrested on a charge of having in her possession birth control literature. Believing her prosecution unjust, numerous prominent club women who were mothers of families aroused the greatest public interest in the entire question. In New York City Dr. Morris H. Kahn, prominently connected with the Mount Sinai Hospital and the New York Department of Health, publicly announced that he was disseminating information about contraceptives to poor women coming to dispensaries of the Department in direct violation of the penal code. He stated that investigation showed that abortions are much more frequent among women ignorant of all methods of control than among those who have even inadequate information.

Birth Control Leagues were formed during 1916 and 1917 in nearly every important city, including the following: New York, Chicago, Philadelphia, St. Louis, Boston, Cleveland, Ann Arbor, Los Angeles, San Francisco, Portland, Ore., Seattle, Detroit, Racine, Wis., Milwaukee, St. Paul, Minneapolis, Spokane, Denver, Indianapolis, Washington, D. C., and Pittsburgh. These were brought into the National Birth Control League, with headquarters at 104 Fifth Ave., New York City. Mr. Frederick A. Blossom resigned as business manager of the Cleveland Associated Charities to become head of this national organization and editor of its *Birth Control Review*. The first issue of this monthly appeared in February "dedicated to the principle of intelligence and voluntary motherhood." Mr. Blossom soon resigned the editorship but after suspending some months the *Review* again appeared in December under new management. About the same time appeared the *Birth Control News*, to be issued occasionally by the Birth Control League of Ohio, with headquarters in Cleveland. This bore the heading "The rational limitation of offspring is not only a right but a duty; the state should recognize that right and teach that duty."

BIRTH RATE. See Vital Statistic.

BLACK LIST. See Trading with the Enemy Acts.

BLENK, James Hubert. An American Roman Catholic prelate, died in New Orleans, La., April 20, 1917. He was born at Edenkoben, Bavaria, in 1856. He received his education at St. James's College, Baltimore, and at Jefferson College, in St. James Parish, La. Entering the Society of Mary in 1874, he went abroad to study in Marist Houses of Studies in France and Ireland. As an ordained priest, he returned to the United States in 1885, and accepted a professorship in Jefferson College. Of this he became president in 1891. After making a tour of the Marist institutions in Europe and serving as auditor of an apostolic delegation to Cuba and Porto Rico, he was consecrated bishop of the latter island in 1899. Seven years later he was appointed archbishop of New Orleans. Archbishop Blenk was a convert to Catholicism from the Lutheran Church.

BLISS, Tasker Howard. An American soldier, appointed September 21, 1917, Chief of Staff of the Army of the United States in succession to Gen. Hugh Lenox Scott (q.v.). He was born December 31, 1853, at Lewisburg, Pa., and studied for two years at the university of that city (now Bucknell University). He graduated from the Military Academy at West Point in 1875, was professor of military science at the Naval War College in 1885-88, and was for two years military attaché to the American legation at Madrid. After the close of the Spanish-American War, in which he had served during the Porto Rican campaign of 1898, he was made Collector of Customs at the Port of Havana and in 1902 was appointed special envoy to Cuba to negotiate the treaty of reciprocity between Cuba and the United States. He became commandant of the War College in 1903, held command in the Philippines in 1905-09, and in the early part of 1911 commanded the provisional brigade on the southern California border during the Mexican Insurrection, and later the Western Division for a short time. After August 12, 1911, he was successively in command of the Department of the East, of the Southern Department and the Cavalry Division. Appointed Assistant Chief of Staff on February 15, 1915, he was promoted November 20, 1915, to major general of the United States Army. After the departure of Gen. Hugh L. Scott, with the American Mission to Russia, headed by Elihu Root (q.v.), Gen. Bliss became Acting Chief of Staff. After his appointment as Chief of Staff he reached the age of retirement on December 31, 1917, but was immediately re-appointed.

BOHEMIA. A crownland and titular kingdom of Austria, occupying the northwestern part of the Empire. It is bounded by the Kingdom of Saxony and the Prussian Province of Silesia on the north, Moravia on the east, Moravia and Lower and Upper Austria on the south, and Bavaria on the west. Bohemia has an area of 20,057 square miles, being about half the size of Kentucky and, after Galicia, the largest of the Austrian crownlands. The population, as returned by the 1910 census, was 6,769,548, as compared with 6,318,697 in 1900; the natural increase in the decade was 622,405 and the net emigration, 171,554. The estimated population in 1913 was 6,860,029. Of the Austrian population present at the 1910 census, persons whose vernacular was German numbered 2,467,724 (36.76 per cent); Bohemian, Moravian, Slovak, 4,241,918 (63.19 per cent,; Polish, 1541; Ruthenian, 1062. Of the inhabitants in 1910, Catholics numbered 6,477,536 (95.69 per cent); Evangelicals, 176,941 (2.61 per cent); Jews, 85,826 (1.27 per cent). In 1910 there were dependent on agriculture (including forestry) about 32.3 per cent of the population; industry and the trades, 41.1 per cent; commerce and transportation, 13.2; public and military service and without vocation, 13.5. The capital and largest city of Bohemia, and the second city of Austria, is Prague; it is the seat of a German and a Bohemian technical high school and a German and a Bohemian university. Its population (including environs), as estimated June 30, 1914, was 541,500. Population of Pilsen in 1914, 84,800; Budweis, 46,300; Aussig (Ústí nad Labem), 40,000. Bohemia has a unicameral diet of 242 members; it is represented in the lower house of the Austrian Reichsrat by 130 members. See Austria-Hungary.

BOILERS. During 1917 the general tendency to employ larger generating units had its effect in a demand for boilers of increased capacity, and at the same time the trend towards higher pressure accompanied by superheat, which has been noted in previous issues of the Year Book, continued. The pressure limit for a standard boiler in the United States was placed at 350 pounds, although pressures of from 500 pounds to 600 pounds were expected within a few years, and experimental work in the design and development of such boilers was under way. In the year under review, pressures up to 250 pounds were common, though 300 pounds was about the highest for steam turbines, and the higher pressures were proposed in a number of new stations which were being planned. A boiler constructed for 350 pounds pressure had been in successful operation in Great Britain at the works of the British Thomson-Houston Company. At Joliet, the Public Service Company of Northern Illinois, in its new central station plant, installed cross-drum boilers for 350 pounds pressure and 225 degrees of superheat, this installation marking the limit for American boilers of standard design. In this boiler the plates of the drum were $1\frac{1}{16}$ of an inch thick, and the longitudinal seam was a quadruple-riveted butt joint with double covered straps. The boiler tubes were of lower gauge than in boilers designed for 250 pounds pressure, and in the economizer tubes the metal was ¼ of an inch in thickness.

Another notable plant was that of the Buffalo General Electric Company whose boilers were of the cross-drum type, having 11,400 square feet of steam-making surface and were designed for a 250 pounds pressure, and 275° of superheat, giving a total steam temperature of 689°. The initial boiler installation was 60,000 kw. in three units, fired at both ends by two 15-retort end-feed stokers capable of supplying 15 tons per boiler per hour, and affording a grate area ratio to heating surface of 1 to 27.3. The evaporation per square foot of heating surface was 14.4 pounds.

Another important development of the year was the Stevens and Pratt boiler made up in four sections, each composed of a complete Babcock and Wilcox cross-drum boiler and having its own superheat economizer and draft-fans. This unit was made up of two sections on the same side with the boilers placed end to end, and had one stack. The unit occupied 7632 sq. ft. of floor space, and was complete in itself with the exception of the coal bunkers, and avoided the elaborate boiler-room construction usually seen.

The scarcity of fuel during the year led to the adoption of various underfeed stokers to burn the high-ash bituminous coals of the Middle West and lignite, while for large quantities of anthracite coal the duplex stoker was being more used. Another attempt of the year in the interest of economy was to apply forced draft to a chain grate, but with bituminous fuel solution of the problem was considered practically impossible, though promise was made in efforts with anthracite.

With the increase in boiler pressure, steam velocities also increased, and at the Joliet plant of the Public Service Company of Northern Illinois, a velocity of 7200 ft. per minute was secured at normal load in the turbine leads. In other cases, this velocity was exceeded and in this way it was possible to reduce pipe diameters and minimize the cost of pipe line construction. The increased use of instruments of the recording type in the boiler-room continued, and on account of the high cost of fuel economies and greater efficiency were sought after as never before, for in many plants the husbanding of the coal supply was a vital matter.

The United States Bureau of Standards announced the results of an investigation made at the request of the Steamboat Inspection Service on the subject of steam boiler plates. In the course of this work, it was developed that the specifications heretofore enforced had been unnecessarily severe, and might be relaxed so as to increase the output without any sacrifice of safety. The Bureau of Standards recommended that the sulphur limit be raised from 0.04 per cent to 0.05 per cent though no change was made in the phosphorus which remains at the maximum of 0.04 per cent. New conditions of test were adopted for plate material and the rule for determining the working pressure of the flat surfaces of boilers was also modified.

During 1917 the American Uniform Boiler Law Society organized to secure the legal adoption of the boiler code of the American Society of Mechanical Engineers, made considerable progress in having the various legislatures pass the enabling acts creating boards to draw rules which usually embodied the code of the Society of Mechanical Engineers. In some cases, the Boilermakers' Union succeeded in having a rider attached to the enabling act which provided that only boilermakers should be appointed as inspectors, and this rider usually succeeded in defeating the proposed law. The new code by 1917 had been adopted or was about to be enforced in New York, New Jersey, Pennsylvania, Ohio, California, Minnesota, Wisconsin, Michigan, and Indiana, and the cities of St. Louis and Kansas City, Mo. The bill failed of passage for various reasons in Washington, Oregon, Texas, Tennessee, Rhode Island, New Hampshire, South Dakota, Iowa, Utah, and Kansas. See STEAM ENGINE; STEAM TURBINE.

BOKHARA. A Russian vassal state in central Asia. Estimated area, 83,000 square miles; estimated population, 1,500,000. Capital, Bokhara, with about 75,000 inhabitants. Other towns are: Karshi (25,000), Hissar, Khuzar, and Shahr-i-Zabz (about 10,000 each). Mohammedanism prevails. Russians in the country number upwards of 10,000. The town of Bokhara is only a few miles from the line of the Trans-Caspian Railway, which traverses the country; the length of the railway within Bokhara is 186 miles. The Ameer in 1917 (from January 6, 1911) was Sayid-Mir-Alim Khan.

BOLIVIA. An interior republic of South America. Historically, the capital is Sucre, which is still the seat of the supreme court, but the executive and legislative departments of government are at La Paz, where also the foreign diplomats are resident.

AREA AND POPULATION. According to an official estimate, the area is 1,379,014 square kilometres (532,437 square miles), or, including disputed territory, 1,458,034 square kilometres (562,047 square miles). Another estimate, which is perhaps as nearly satisfactory as any until the Paraguayan boundary is determined, is 514,690 square miles. The area of 532,437 square miles is approximately twice the size of the State of Texas. A recent estimate of population is about 2,890,000, but this may be regarded as excessive; probably another recent estimate of about 2,268,000 is more nearly correct. The 1900 census showed a population of 1,744,568; of this number, 50.9 per cent were Indian, 26.7 per cent mestizo, 12.7 per cent white, 0.21 per cent negro, and 9.4 per cent unclassified. The bulk of the population, both rural and urban, is resident in the great lofty plateau of western and central Bolivia. Estimated population of the larger towns: La Paz, about 100,000; Cochabamba, 31,000; Sucre, 30,000; Potosí, 30,000; Oruro, 25,000; Santa Cruz, 22,000; Tarija, 10,000; Trinidad, 6000.

EDUCATION. A large part of the population is illiterate. Primary instruction is free and nominally compulsory, but probably not more than 60,000 pupils are registered in primary schools. For secondary education there are a few so-called colleges and other institutions. Higher or special instruction is offered by several establishments, as the university and the normal school at Sucre, the university and the school of commerce at La Paz, the school of languages at Potosí, the schools of mines at Potosí and Oruro, and the agricultural and veterinary school at Cochabamba. The normal school at Sucre is said to rank among the best of its kind in South America. The state religion is Roman Catholicism, but the exercise of other forms of worship is permitted.

PRODUCTION. Agriculture in Bolivia is important only to meet local needs and not as a factor in the foreign trade: cultivation of the soil has not become extensive or highly developed. The products include corn, barley, rice, potatoes, beans, etc. Coffee, coca, and quina are also produced and have a place in the foreign trade. By far the chief product of the soil commercially is rubber, large quantities of which are gathered in the northern forests. The export value of Bolivian rubber is exceeded in South America only by that of Brazil. But its mineral resources constitute the republic's chief source of wealth. The country contains deposits of nearly all known metals, some of them widely distributed and very rich and abundant. Formerly Bolivia stood third among the silver-producing countries of the world, and now, among the tin-producing countries, ranks second only to the Federated Malay States. The tin zone in Bolivia is divided into four districts—La Paz, Oruro, Chorolque, and Potosí. The commercial centre of the industry is the city of Oruro, which is also the centre of the Bolivian railway system. The tin-mining country is much in the Cordillera Real, and the lodes are found at altitudes of from 11,000 to 16,000 feet. After tin the important metals now mined are copper, antimony, bismuth, silver, and tungsten.

COMMERCE. Imports and exports in 1914 were valued at 39,761,222 bolivianos ($15,506,876) and 65,801,146 bolivianos ($25,662,447) respectively; in 1915, 22,574,567 bolivianos ($8,804,081) and 95,210,351 bolivianos ($37,132,037). The boliviano is here valued at 39 cents. In thousands of bolivianos imports and exports have been as follows:

	1911	*1912*	*1913*	*1914*	*1915*
Imports	58,371	49,509	54,763	39,761	22,575
Exports	82,631	90,123	98,722	65,801	95,210

Classified imports are stated as follows, in bolivianos:

	1913	*1914*	*1915*
Live animals......	2,230,284	1,912,926	927,740
Food and drink...	10,353,546	9,508,142	9,425,682
Raw material.....	4,706,631	5,197,835	2,943,177
Manufactures	34,095,872	20,017,819	9,277,968
Gold and silver, including coin.....	3,376,500	3,125,000	......
Total.........	54,762,833	39,761,222	22,574,567

Classified exports, in bolivianos:

	1913	*1914*	*1915*
Live animals......	117,310	238,860	792,860
Food and drink...	27,760	75,036	140,800
Raw material.....	90,000,808	59,878,942	90,236,165
Manufactures	261,199	286,605	295,843
Gold and silver, including coin.....	3,314,436	5,321,694	3,744,682
Total.........	93,721,513	65,801,146	95,210,350

The principal imports are cotton and woolen goods, provisions, machinery and hardware, wines and spirits, and apparel. The following table shows the principal exports in metric tons, valued in thousands of bolivianos, in 1914 and 1915:

	1914		*1915*	
	Tons	*1,000 Boliv.*	*Tons*	*1,000 Boliv.*
Tin concentrates..	37,260	42.480	36,492	44,885
Copper barilla and ore	8,667	4,443	23,813	14,035
Antimony ore.....	166	31	17,928	13,442
Rubber	4,485	8,280	5,055	10,769
Bismuth ore......	550	2,802	663	3,670
Silver, uncoined....	72	2,531	82	2,983
Wolframite	276	428	792	1,498
Coca	848	651	389	732
Hides	374	287	613	471
Silver coin.........	...	21	...	398
Lead ore..........	1,555	155	2,208	353
Gold ore..........	...	291	...	307

Of the tin concentrates, the United Kingdom took, in 1915, almost the entire export, namely, 35,358 metric tons, valued at 43,490,505 bolivianos. The United Kingdom also took in 1915 nearly one-half the copper barilla, a quarter of the copper ore, practically all of the bismuth, and over 90 per cent of the antimony. The United States took over 90 per cent of the rubber. By principal countries, imports and exports were as follows, in thousands of dollars:

	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
United States........	1,808	1,859	956	9,757
Peru	1,115	1,666	395	31
United Kingdom......	3,045	1,417	20,255	25,988
Chile	2,140	1,316	484	291
Argentina	1,006	576	845	565
Germany	4,144	420	1,439	25
France	413	166	1,036	319
Brazil	808	824	1	65
Spain	206	96	4	52
Total, incl. others.	15,507	8,804	25,662	37,137

COMMUNICATIONS. Between 1906 and 1917 eleven railway lines were constructed in Bolivia, totaling upwards of 660 miles. On July 4, 1917, the Oruro-Cochabamba line (125 miles) was opened to traffic, bringing the total length of railway in operation to 840 miles. There remained some 350 miles under construction. The Bolivian railways are connected, so that the chief towns, excepting Sucre, have rail communication. The railway has not yet been extended to Sucre. La Paz, Oruro, Cochabamba, and Potosí have rail communication with the Chilean ports of Arica and Antofagasta and (aside from the country about Lake Titicaca, which is traversed by steamer) with the Peruvian port of Mollendo. It is of interest to note that construction continues on the line from Tupiza to La Quiaca (56 miles). The latter town, on the Argentine frontier, is the terminal of a branch of the Argentine railway system. From Tupiza northwest to Atocha is a stretch of 65 miles without railway. Thus the completion of 121 miles of line, between Atocha and La Quiaca, will put La Paz in rail communication with Buenos Aires.

In 1917, there were in operation in Bolivia about 840 miles of railway and under construction about 1100 miles with some 3000 more or less definitely proposed. The important construction work involved the extension of Yungas railway from La Pax to Coripata, and thence to Rurrenabaque on the Beni River. The route then leads from Cochabamba to Santa Cruz, and from Santa Cruz to Trinidad, and from Potosí to Sucre, the latter section nearing completion in 1917. With the completion of the section from Tupiza to La Quiaca, which was under construction in 1917, there would be a through connection between the Pacific and Atlantic at Buenos Aires, Argentina. This through line was of interest as being a part of the proposed Pan-American railway route. The financing of the La Quiaca-Tupiza and La Paz-Yungas lines was carried on in France and the United States, while the Potosí-Sucre line was being built with appropriations from the government of Bolivia. The National Congress of Bolivia had authorized the guaranteeing of $5,000,000 for a line from Tupiza to Atocha. The total cost of the railway construction by the Bolivian government up to 1917 amounted to $30,316,965, while the American capital invested in the foreign railway projects was estimated at about $17,000,000. Of the proposed projects, the extensions of the Potosí-Sucre Railway to Puerto Suarez on the Paraguay River which was said to be controlled by an Italian syndicate, the Fomento de Oriente Boliviano, involved a length of line of between 425 and 450 miles and a cost in excess of $10,000,000; the right-of-way for this project by 1917 had been partly surveyed. To meet the Argentine line being constructed from Embarcacion to Yacumba on the frontier, a Bolivian project of a line 250 miles southward from Santa Cruz was being discussed. Concession had been granted by the government for the construction of the line and the surveyors had examined a large part of the route. To connect with the Argentine line at La Quiaca on the frontier, Bolivian interests had surveyed a line from Tarija, Bolivia, in the centre of a rich agricultural area. This line would probably not exceed 125 miles in length.

Telegraphic communication is established with foreign countries and between the principal towns, including all the departmental capitals. Reported length of line, 6858 kilometres (4259 miles); offices, 216. There are several radiotelegraph stations.

FINANCE. Bolivia's standard of value is gold. The monetary unit is the boliviano; its par value is 38.932 cents, 12.5 bolivianos being equivalent to one pound sterling. Revenue is derived chiefly from import and export duties and taxes. The estimated revenue and expenditure for 1916 were 16,034,500 and 22,573,338 bolivianos respectively. The public debt, as reported for June 30, 1916, amounted to 53,211,355 bolivianos, the foreign debt being 36,340,595 and the internal debt 16,870,760.

GOVERNMENT. The legislative power is exercised by a congress of two houses, the Senate and the Chamber of Deputies. Senators (16 in number) are elected for six years, and deputies (75) for four years, all by direct vote. The suffrage is held by every male citizen over twenty-one years of age who can read and write and has a fixed, independent income. The executive power is vested in a president, who is elected by direct vote for four years, and is ineligible for the next term. Two vice-presidents are elected for the same period. The president is assisted by a cabinet of six ministers. For the term beginning August 14, 1913, the president was Ismael Montes, who succeeded Eliodoro Villazón. On May 6, 1917, the leader of the Liberal party, José Gutiérrez Guerra, was elected president and on August 15 was inaugurated at La Paz for the four-year term. The new first and second vice-presidents respectively are Ismael Vásquez and José S. Quinteros.

HISTORY. Bolivia followed the example of other neutrals in protesting against the German menace. The note, which was made public in the United States on February 12, declared that the German government was trying to abolish by its own will the rules which, according to international law and practice, permitted neutrals to carry on their trade, and that the effect of this was to force neutrals in a way to enter the war. The note declared that the Bolivian government had resolved to consolidate its attitude with that of the government of the United States. On April 13 it was announced that the Bolivian government had handed the German Minister his passports and a note breaking off negotiations. The note referred to the sinking of a Bolivian vessel which was sailing in neutral waters and which had on board the Bolivian Minister. The vessel (the *Tubantia*) was sunk by a German submarine. While announcing the rupture of diplomatic relations the note declared that German subjects as well as German property would enjoy their legal rights so long as they kept within the law themselves. On May 7 José Nestor Gutierrez, minister of war, was elected president to succeed General Ismael Montes. It was reported that the defeated candidate, De Escalier, had taken refuge in the Argentine legation at La Paz on account of a revolutionary movement in the departments of Oruro and Potosí. The new president was inaugurated on August 17.

BOLL WEEVIL (BOLLWORM). See COTTON.

BOLSHEVIKS (Russian, *Bolsheviki;* plural of *bolshevik*). A nickname originally applied to the majority (Russ., *bolshinstvó*) at the second Congress of the Russian Socialist Party in 1903, as opposed to the *Mensheviki*, or minority. At that time the two wings differed merely on the subject of party administration; in the course of time, however, the breach between the two kept ever widening. The Mensheviks advocate social transformation through a process of gradual reform and education of the masses, while the *Bolsheviki* are International Communists, their programme including a revolution of the proletariat of all countries and government control by, and in the interest of, the proletariat, to the exclusion of all others. Although now a minority among Russian Socialists, the appellation of *Bolsheviki* has stuck to these extremists, but the word *bolshevik* is not, as has been often stated, the Russian for a "maximalist" and "extremist." See RUSSIA, *History*.

BOOTS AND SHOES. Throughout the world the boot and shoe industry as well as the leather trade generally felt the effects of the war and the shortage of hides and leather. The vast amount of boots and shoes, as well as other manufactures of leather required for the armies of the world, led to a curtailment of the product for civilian use, especially in Europe. In Germany wooden soles made of beech wood were treated so as to become pliable and found extensive use during the year, and were well liked by those wearing them. By a German edict of October 13, all shoes in Belgium except wooden shoes were requisitioned and in many cases this order even went into the households.

In France, England, and Italy, the prices of shoes were being fixed, at least for the poorer portions of the population, and in the first named country, a government standard shoe was selling at from $2.75 to $4.87, according to quality, the retailers' profit being from 45 cents to 75 cents. Various patterns were available for the manufacturers who were obliged to work under special contract and minute instructions. No attempt had been made to employ standardized lasts, but shoes made of special leathers and cloths were encouraged. In Italy, the government was operating its own shoe factories, turning out a standardized national style which was commented on as having more utility than beauty. In Great Britain, an official order prohibited the manufacture of women's boots with uppers over seven inches in height if of leather, or of eight inches if of any other material.

In Switzerland, standard shoes were developed and were to be placed on sale early in 1918. There was no movement for a standardization of shoes for civilians in the United States but it was believed that there would be a general tendency to cut down the number of styles and introduce various economies.

It was reported that there had been an increase in repairing shoes in the United States, and manufacturers were preparing various economies for the ensuing year. There was an increased use of rubber and various artificial products for soles, a number of which were giving considerable satisfaction. In May and June the Commercial Economy Board studied the possibilities of conserving leather by simplifying shoe styles and a number of conferences were held with tanners, last makers, shoe manufacturers, and also merchants and retailers. Various measures of coöperation were inaugurated, and it was hoped that the available leather would be most economically used in the future.

During the year, the United States Bureau of Census issued a bulletin with the shoemaking industry covering the year 1914. This bulletin showed that for the year under review there were 1300 shoe manufacturing establishments in the United States with an annual output of nearly 300,000,000 pairs of shoes, with an average production for a single factory of approximately 220,000 pairs annually, an increase over conditions in 1909 when the average annual output was less than 200,000 pairs. This obviously indicated that the average factory was increased in size, and a further consideration of the statistics indicated that the tendency towards concentration in the shoe industry continued.

Army Shoes. Throughout the United States generally 21,000,000 of shoes were contracted for in 1917 for the Army and Navy, and fifty factories were engaged in this work. Three hundred thousand pairs of rubber boots for soldiers in the trenches were contracted for in October, 1917, and the American supply was placed before that which was being furnished for the armies of Great Britain and France.

An interesting development was the large number of short size army shoes, by which it became apparent that the American recruits had larger feet than had been figured in the tables of sizes developed by the Quartermaster's Department. This led to a substantial reorganization and the ordering of larger shoes, but at the same time it was responsible for a shortage at a number of the camps.

Foreign service particularly made the further adjustments necessary and the commanding officer in France recommended the dropping of the smallest size and the narrowest widths in all sizes, and added various widths in sizes 13 and 14, size 12 having been the largest size previously called for by the army tables. The question of the supply of shoes for the Army figured in the Congressional investigation of the War Department and brought out a number of interesting developments. The Munson last used by the Army was criticized by shoe manufacturers in that it was too short and too wide, while the system under which shoes were fitted to the individual soldiers came in for much unfavorable comment.

The U. S. Department of Labor in a report stated that employment in the boot and shoe industry for sixty-eight establishments was 53,170 employed in 1917, as compared with 57,094 in 1916. There was a gain in the number employed in October over September, and there was a gain of 5.5 per cent in the pay rolls for October, 1917, over 1916. In 1917, the City of Brockton, Mass., shipped 621,900 cases of 15,547,500 pairs of shoes, or 178,734 fewer cases, approximately 4,343,000 pairs less than in 1916. Of the 1917 output 3,265,000 were army shoes and over 5,000,000 were under contract for the Army and Navy in this city. Prices for such shoes ranged from $4.65 to $4.80 per pair. See Leather.

BOSNIA AND THE HERZEGOVINA. Provinces, formerly Ottoman, annexed to the Austro-Hungarian monarchy October 5, 1908. Area: Bosnia, 16,239 square miles; the Herzegovina, 3529; total, 17,769. Civil population according to the census of October 10, 1910: Bosnia, 1,631,006; the Herzegovina, 267,038; total, 1,898,044; in addition, military population, 33,758; grand total, 1,931,802, as compared with 1,591,036 in 1895. Estimated population at end of 1912, 1,962,411. The nationality of the people is principally Serbo-Croatian. Of the population in 1910, adherents of the Serbian Orthodox Church constituted 43.48 per cent; Roman Catholics, 22.88 per cent; Greek Catholics, 0.43 per cent; Evangelicals, 0.34 per cent; Jews, 0.62 per cent; Mohammedans, 32.25 per cent. According to the 1912 estimate, adherents of the Serbian Orthodox Church numbered 856,158: Roman Catholics, 451,686; Greek Catholics, 8605; Evangelicals, 6734; Jews, 12,798; Mohammedans, 626,649. Population of the larger towns in 1910: Sarajevo (Bosna Serai), capital of Bosnia and of the territory of Bosnia and the Herzegovina, 51,919; Mostar, capital of the Herzegovina, 16,392; Banjaluka, 14,800; Tuzla, 11,333; Bjelina, 10,061; Srebrenica, 7215.

Agriculture is not in a high state of development, although in 1910 the percentage of the population dependent thereon was 87.9. Nearly half of the total area is under forest. The mineral output in 1915 included: Lignite, 798,891 metric tons; iron ore, 110,410; manganese ore, 10,422. Output of metals in 1915: Pig iron, 25,701 metric tons; rolled iron, 14,019; steel ingots, 18,933. Bosnia and the Herzegovina are included in the Austro-Hungarian customs territory. The imports from and exports to Austria-Hungary and foreign countries in 1912 were estimated at 174,713,655 and 130,179,153 kronen respectively. In 1915 there were 956 miles of railway; in 1914, 2202 miles of telegraph line and 6625 miles of wire; post and telegraph offices, 249.

The provisional budget for 1916-17 showed revenue of 118,596,602 kronen (largely from railways and the tobacco monopoly) and expenditure of 118,573,512 kronen. The constitution of Bosnia and the Herzegovina bears date of February 17, 1910. The diet, consisting of seventy-two elective and twenty appointive members, is competent to deal with provincial finance, taxation, police, railways, public works, and civil and criminal law, subject to Austro-Hungarian veto. There is a governor and a government in six departments, while the highest administrative authority is the Austro-Hungarian minister of finance acting for the emperor-king.

BOSTON UNIVERSITY. A non-sectarian institution of learning located at Boston, Massachusetts. Students in the fall of 1917 numbered 3400 and there were 225 members of the faculty. Volumes in the library numbered 65,000. There were productive funds amounting to $1,300,000 the income from which was $60,500. The University received a bequest of $565,000 from the will of Mrs. C. C. Cornin in 1917. Boston University was founded in 1869. President, Lemuel Herbert Murlin, D.D., LL.D.

BOTANY. Meetings of the Botanical Society of America, the Ecological Society of America, the American Phytopathological Society, and other affiliated societies were held in conjunction with the American Association for the Advancement of Science in New York City, December 26 to 31, 1916, and at Pittsburgh, Pa., on December 28, 1917. The South African Association for the Advancement of Science met at Stellenbosch, July 2 to 6, 1917. The meeting of the British Association for the Advancement of Science scheduled for 1917 was canceled on account of war conditions. The Botanical Society of Russia was organized at Moscow, December 16, 1916. The society has begun the publication of *The Journal* of the Russian Botanical Society.

The Third Annual Field Conference of Cereal Pathologists met at Madison, Wisconsin, July 9 to 11, 1917. A conference on the white pine blister rust was held at Albany, New York, late in 1916. A Plant Disease Survey was organized in the United States Department of Agriculture July 1, 1917, to collect information on plant diseases in the United States. Collaborators have been appointed for every State in the country.

Considerable extension was made to quarantine regulations of the United States and other countries. Federal and State quarantines were in force against the importation of white pines, currants, and gooseberries on account of the white pine blister rust. Canada also had similar restrictions in force. The Arkansas Legislature provided for a State Plant Board, which was given broad powers for preventing the introduction of insect pests and fungous diseases. Idaho and Colorado also enacted inspection laws. New Zealand prohibited the importation of all kinds of pome fruit stocks on account of the root knot disease. Queensland put into effect a Disease in Plants Act on January 1, 1917. A Commission of Plant Sanitation was created in Cuba.

The committee on bacterial classification of the Society of American Bacteriologists recently appointed has submitted its report, which recommends for bacterial nomenclature the general principles of the international rules of botanical nomenclature adopted at Vienna.

NECROLOGY. Among botanists of note who died within the past year were: Prof. Daniel Oliver, formerly connected with Kew Botanic Gardens; Dr. George Massee, the well-known English mycologist; Prof. H. H. W. Pearson, of the College of South Africa; W. G. Smith, plant illustrator and fungologist; Philippe de Vilmorin, a French investigator in genetics; Dr. M. Raciborski, famous for his investigations in plant diseases in Java; Dr. C. H. Peck, for many years botanist of the State of New York; Dr. H. W. Conn, an eminent bacteriologist, and J. Y. Bergen, the author of a number of botanical text-books.

PLANT BREEDING. A committee was formed by the British Association for the Advancement of Science to report progress on experimental studies in the physiology of heredity. Pearl suggested a simplification of methods for the estimation of the probable error of a Mendelian class frequency. De Vries described some dimorphic mutants of Œnothera in which the hereditary phenomena were independent of visible characters. Atkinson gave an account of twin hybrids in Œnothera and Davis of intercrosses and back crosses of F_1 Œnothera hybrids. East described inheritance in Nicotiana crosses; Harris, correlations in sugar beets; Altenburg, linkage in Primula; Emerson, linkage intensities; Detjen, inheritance in *Vitis rotundifolia;* Collins, hybrids between *Zea ramosa* and *Z. tunicata;* Frost, mutation in *Matthiola annua;* and Harris, correlations in beans.

East claimed that self-fertility was dominant over self-sterility in Nicotiana. Goodspeed and Clausen considered self-sterility in species crosses of Nicotiana due to nonspecific incompatibility. Trabut claimed that alfalfa, *Medicago sativa,* had arisen by the hybridization of two primitive species, *M. falcata* and *M. getula.* East considered bud variation so infrequent that it might be disregarded in plant breeding. On the other hand, Stout showed the possibility of establishing varieties of Coleus by the selection of somatic variations, and Shamel gave an account of his investigations on the improvement of citrus through bud selection. Lotzy claimed that crossing was the cause of the origin of new types which were perpetuated by heredity, natural selection being the cause of their extinction and not their origin.

Trelease described about forty natural hybrid oaks. Standish thought that a large number of the recently described species of Cratægus are true hybrids. There was a considerable number of contributions to the subject of sterility in hybrids. Moore thought that in some cases it was due to a deficiency of food materials for the pollen tube, causing a stoppage of longitudinal growth before fertilization is possible. Goodspeed and Ayres reported partial sterility in Nicotiana hybrids, the pollen being shrunken and functionless. Ruth Cole claimed that many species of Rosa were hybrids and not mutants, their pollen being largely abortive.

Hoar reported pollen sterility a common character in Rubus, many species crosses being sterile hybrids. Backhouse cautioned against ascribing too much importance to fertility of hybrids as a guide to relationships. Cole and Wright applied the principles of line breeding to bacteria, and they claimed that many of the variations reported in ordinary cultures were due to selection, by the investigator or the environment, of preëxisting biotypes and the suppression or elimination of others.

ECOLOGY, ETC. Ecological studies on the factor limits of forest, grass land, and desert were reported on by the Carnegie Desert Laboratory staff. Lipman called attention to the benefit to be derived by closer coöperation between soil scientists and ecologists, many of their problems being closely related. Richter and others showed that plants required the same initial intensity of light for carbon dioxide decomposition whatever their ecological relations. Those having special adaptations for intensifying light might exist in habitats with lower illumination than other plants not so provided.

Cannon considered aëration of soil no less important than temperature and water. Iljin and others from studies of swamp and steppe plants found a close relationship between osmotic pressure and the amount of water at the disposal of the plant. Drought resistance in plants, they found, was due to their more economical evaporation of water. Yuncker also reported an important relation to exist between the amount of soil moisture and the activity of transpiration and photosynthesis. Bowman claimed that the red mangrove transpires in proportion to the concentration of the medium. Gates concluded that a change in evaporation was the cause and not the result of plant successions.

Bews gave an account of the chief types of vegetation in South Africa, and he called attention to the rarity of formations or associations composed of a single species of plant. Harper made a quantitative, volumetric, and dynamic study of the vegetation of the *Pinus tæda* belt of Virginia and the Carolinas. Reed gave the results of a study of meadow formations in Colorado, and Shantz described the plant successions in abandoned roads in the same region. A number of papers on forest successions appeared within the year.

PLANT PHYSIOLOGY, ETC. Mirande claimed that anthocyanin is secreted by granular mitochondria. According to Moreau, rhodoxanthin originates in plastids without passing through a chlorophyll stage. Shibata reported the very common occurrence of flavone derivatives which play an important rôle in the protection of chlorophyll through the absorption of ultraviolet rays. Delft showed that the permeability of protoplasm to water might be increased rather indefinitely with a rise in temperature. Osterhout considered the claim that permeability is of a chemical nature not proven by the evidence thus far presented. Denny reported that permeability of plant membranes is affected by lipoids, tannins, and pectic substances.

Osterhout found marked differences in marine plants and parts of the same plant with respect to their tolerance to fresh water, suggesting protoplasmic differences. Brooks claimed that living protoplasm was permeable to solutions of certain salts, some increasing and others diminishing permeability. Sodium salts increase and calcium salts decrease exosmosis in dandelion scapes. Brown and Tinker added to the evidence regarding a semipermeable membrane in barley seeds.

Livingston and Shreve described improvements in the method of measuring the transpiring power of plant surfaces. Tomato leaves were found by Shive and Martin to increase their transpiration when coated with Bordeaux mixture. Knight claimed that there was no necessary agreement between stomatal opening and transpiration rate. Wilkie found marked individual differences in the periodicity of transpiration in quite a range of plants. Briggs and Shantz found no close agreement between the hourly transpiration and the evaporation rate in alfalfa. Livingston showed a regular periodicity in the foliar transpiration power in plants, the cycle changing from low night to high day values. MacDougal claimed that the apparent periodicity of root growth of forest trees can be explained by a scarcity of water in summer rather than any inherent tendency. Jadin and Astruc believed that arsenic in plants plays a part comparable with phosphorus and that manganese favors the oxygen reactions of plants. Brigham found that maize could assimilate certain organic nitrogen compounds through its roots, but that the assimilation was in some instances greatly facilitated by the presence of *Bacillus subtilis*.

From a study of the pea plant Sure and Tottingham believed that amids may be produced synthetically from carbohydrates and ammonia. Stoklasa showed that the potassium ion was active in the synthesis of nitrogen compounds in the plant cell, especially in the exclusion of light. Loeb considered the phenomena of geotropism due to chemical mass action of the common nutritive substances in the cell sap. Lubimenko announced the discovery of an enzyme which protects chlorophyll from decomposition during the process of assimilation. Palladin and others reported the process of reduction the most commmon of the enzymic activities of plants. Reed called attention to the analogy between the action of plant peroxidase and colloidal platinum. Kastle and Buckner presented evidence regarding the occurrence of oxidase in living plants. Bunzel found, in agreement with other experimenters, that acids inhibit oxidase activity. MacDougal and Spoehr reported upon a sodium cell which gives light measurements more nearly parallel with the plant than any other measure yet known. Jörgensen and Kidd suggested that formaldehyde arises from phytol which is split off from the chlorophyll molecule under the action of light and oxygen.

MISCELLANEOUS. Experiments for increasing plant growth were reported with varying conclusions. Investigations at Kew and Wisley seemed to cast doubt on the value of humogen, or bacterized peat, as an accelerator of plant growth. The practical value of radium compounds for promoting plant growth was questioned by Gager and others. Blackman and Jörgensen reported successful experiments with overhead discharge of electricity in which increased growth and larger yields were obtained from the electrified areas. Pickering summarized experiments on the effect of one plant or another growing near or succeeding it, and found evidence for the toxin theory. Bottomley claimed that auximones were formed during the germination of seeds and that they enabled the embryo to utilize the food materials in the seed.

Burrill and Hansen gave the results of extensive studies of the organisms connected with nitrogen fixation by leguminous plants. All subfamilies of Leguminosæ were found capable of inoculation. Experiments to induce the organisms to grow on nonleguminous plants gave negative results. Forbes showed that the injury caused to plants by copper in irrigation waters was due to the effect produced in the proteids near the growing root tips. Gile and Carrero found that plants in water cultures absorb nutrients in proportion to the number of roots receiving them. The practical importance of this in connection with the application of fertilizers was pointed out. Beccari reached the conclusion that the cocoanut is of Asiatic or Polynesian origin and not American as is claimed by Cook.

Lubimenko reported successful experiments in feeding trees by the introduction of solutions into the wood, and Rankin, following the method of Shevyrev, found that lithium nitrate could penetrate the heartwood of chestnut trees three inches or less in diameter. In larger trees the substance was translocated above and below the point of feeding. Experiments by others with potassium cyanid as an internal insecticide gave negative results.

PLANT DISEASES. Reports were made of a number of diseases of plants due to nonparasitic causes. Crowther and Rustin described various types of injury to plants by smoke. Stone showed that illuminating gas was very injurious to greenhouse plants, roses being especially sensitive to gas poisoning. Doubt found marked variation in plants with regard to gas injury, some being destroyed by quantities of gas far below the limits of perceptible odor while others were quite resistant.

Chivers published additional data on the injurious effects of tarvia fumes on vegetation. Lipman and Gericke claimed that the solids of smelter fumes are not harmful to agricultural plants. Pickering reported that washings from plants are deleterious to the growth of other plants. Lightning injury to potatoes, cotton, sugar cane and other crops was described by various writers. Malnutrition disease of potatoes and cotton, due to lack of potash, was reported. Bioletti and Bonnet described, under the name "little leaf," a serious disease of grapes in California for which no cause had been determined. An internal disease of cotton bolls was reported in the West Indies by Nowell, and a new disease, of unknown causation, to which all native varieties of cotton in Poona is subject, was described.

Maze gave an account of an infectious chlorosis of maize in France. Sideron claimed that chlorosis was due to a lack of iron assimilation under alkaline conditions, while Freiberg considered it due to an enzyme, the original factors for which were unknown. Stewart, Reddick, and others reported a serious mosaic disease of beans. A mosaic disease of potatoes was described by Melhus. A disease of sugar cane, somewhat resembling the sereh disease in Java, appeared in Porto Rico, according to Stevenson.

Among the bacterial diseases of plants, the citrus canker, due to *Bacterium citri*, received most attention in 1917. The United States government was coöperating extensively with various state agencies for its eradication in the Gulf States. Citrus canker had appeared in South Africa and in the Philippines. Stevens found that the bacteria causing this trouble could retain their vitality in soil for more than a year. Experiments of Jehle showed practically all kinds of citrus trees were subject to citrus canker.

Bacterial diseases were described as follows: On lettuce, by Brown; tobacco, by Wolf and Foster; wheat, by Smith; oranges and lemons, by Lee; cherries, by Sackett, etc. Boncquet claimed that a species of Bacillus is associated with the curly top of beets. The bacterial blight of walnuts was reported in the East, but the organism did not appear so destructive as in California. Faulwetter demonstrated the dissemination of bacterial diseases through the splashing effects of rain. Smith described the mechanism of tumor growth in crown gall, and Shaw called attention to the influence of variety on the form of crown gall on apple trees.

A large number of fungous diseases of plants received attention from various investigators. The white pine blister rust became quite serious, and active measures for its control were in progress in many States. McCubbin believed that the alternate form of the fungus might winter over on currants, and Spaulding and Gravatt failed to find any species or variety of currant or gooseberry resistant to its attack. Ants, weevils, snails, and slugs were believed to be active carriers of the spores of the fungus from host to host. The chestnut blight seems to be spreading, no natural means of checking it being known. Stevens believed that its spread in the southern States would be very rapid because of favorable climatic conditions.

Extensive campaigns for the control of potato diseases were waged with considerable success in many countries. Rhizoctonia diseases of potatoes were described as occurring in Maine. Cotton advanced the theory that the potato wart disease originated on wild species of Solanum in Hungary. Surveys of cereal diseases in the United States were made. The Physoderma disease of maize was found widely disseminated. The Peronospora disease of maize had become serious in Java and was being especially investigated to prevent its entry into America.

BIBLIOGRAPHY. Among the botanical books of 1917 or immediately previous, the following may be noted: W. R. G. Atkins, *Recent Researches in Plant Physiology* (London, 1916); F. E. Clements, *Plant Succession* (Washington, 1916); H. W. Conn, *Bacteria, Yeasts, and Molds in the Home*, revised ed. (Boston, 1917); K. C. Davis, *Productive Plant Husbandry* (Philadelphia, 1917); W. F. Ganong, *A Text-Book of Botany for Colleges* (New York, 1916); H. B. Guppy, *Plants, Seeds, and Currents in the West Indies, and Azores* (London, 1917); J. W. Harshberger, *Mycology and Plant Pathology* (Philadelphia, 1917); L. R. Hesler and H. H. Whetzel, *Manual of Fruit Diseases* (New York, 1917); E. C. Jeffrey, *The Anatomy of Woody Plants* (Chicago, 1917); H. Kraemer, *Applied and Economic Botany*, 2d ed., revised (Philadelphia, 1916); H. C. Long, *Plants Poisonous to Live Stock* (Cambridge, 1917); J. P. Lotzy, *Evolu-*

tion by Means of Hybridization (The Hague, 1916); H. Molisch, *Pflanzenphysiologie als Theorie der Gartnerei* (Jena, 1916); W. A. Murrell, *Edible and Poisonous Mushrooms* (New York, 1916); F. R. Petherbridge, *Fungoid and Insect Pests of the Farm* (Cambridge, 1916); W. Trelease, *Pocket Manual of Woody Plants* (Urbana, Ill., 1917); W. W. Robbins, *The Botany of Crop Plants* (Philadelphia, 1917); M. Wheldale, *The Anthocyanin Pigments of Plants* (Cambridge, 1916), and W. C. Worsdell, *The Principles of Plant Teratology* (London, 1916).

BOTULISM. See VETERINARY MEDICINE.

BOULDER, COLORADO. See MUNICIPAL GOVERNMENT.

BOWDOIN COLLEGE. A non-sectarian institution of learning located at Brunswick, Me. Students in the fall of 1917 numbered 343 and there were 29 members in the faculty. Volumes in the library numbered 115,789. In 1917 there were productive funds amounting to $2,473,451, the income from which was $180,057. Bowdoin College was founded in 1794. President William DeWitt Hyde died on June 29, 1917; Dean Kenneth C. M. Sills of the College was acting-president in 1917.

BOWELL, Sir MACKENZIE. A Canadian statesman, died at Belleville, Ont., December 10, 1917, at the age of ninety-four. He was born in 1823 in Suffolk, England, but came to Canada in 1833, and in 1834 was apprenticed as a printer in the office of the Belleville *Intelligencer*, of which later he became editor and proprietor. He took a prominent part in local civic affairs and was elected to the Dominion Parliament for North Hastings in 1867, serving in that body until 1892, for part of that period as a member of the Privy Council and as Minister of Customs. In 1892 he was appointed Minister of Militia and Defense in the Conservative administration, and from 1894 to 1896 he was Premier of Canada. Later he was leader of the Conservative Opposition in the Dominion Senate (1896-1906). He represented the Senate at the coronation of King George V in 1911. Sir Mackenzie was a prominent Orangeman and had held high offices in that society. His editorial work on the Belleville *Intelligencer* was continued until a short time before his death.

BOWLING. The seventeenth annual tournament of the American Bowling Congress was held at Grand Rapids, Michigan, in March. Otto Kallusch, of Rochester, won the individual championship with a score of 698. Archie Rodee, of Milwaukee, was second, one point behind Kallusch. The winners in the other events were: Two-man, Satorious and Holzschuh, of Peoria, Ill., 1346; five-man, Birk Brothers, Windy City League, 3061. Birk Brothers also had the distinction of setting a new world mark for five-man teams, one game of 1102 and for three games of 3061. The Eastern Intercollegiate championship was won by the Rensselaer Polytechnic Institute of Troy, N. Y., in the roll-off of a tie with teams from Yale and Princeton universities.

BOXING. Three world titles changed hands in boxing during 1917. Benny Leonard wrested the lightweight championship from Freddie Welsh; Pete Herman defeated Jimmy Williams for the bantamweight laurels and Mike O'Dowd overthrew Al McCoy in a bout for the middleweight crown. The most sensational of these upsets was the victory secured by Leonard over Welsh, the former knocking out the latter before a crowded house at the Manhattan Casino, New York City, on May 28.

The champions who retained their titles during the year were Jess Willard, heavyweight; Billy Miske, light heavyweight; Ted Lewis, welterweight; Johnny Kilbane, featherweight; and Jimmy Wilde, flyweight. Willard did not defend his championship despite the large number of challenges he was confronted with. It should be said in his defense, however, that none of the aspirants save perhaps Fred Fulton were of a strong enough type to have any hopes of being returned the victor.

The repeal of the Frawley Law by the New York State Legislature dealt a severe blow to the sport in the metropolis where it had attained its greatest popularity. The repeal was due to the stand taken by Governor Whitman who was dissatisfied with the conduct of the sport both on the part of the State Commission he himself had appointed and the promoters whose methods brought boxing into disrepute. A vigorous campaign was inaugurated in the latter part of 1917 to have a new law enacted, which by remedying the defects of the old measure should restore the sport to its former prestige and privileges.

Three boxers of note died during the year. They were Robert Fitzsimmons, one of the greatest fighters of all time; Les Darcy, the Australian middleweight who came to the United States seeking the world title after having defeated every contender in his own country, and Al Palzer, a boxer of less prominence.

The championships of the Amateur Athletic Union were held at Boston, Mass., in April. The results of the final bouts were: 108-pound class, Thomas Fall, Lowell, Mass., defeated Freddie Madden, East Boston, three rounds; 115-pound class, J. Tomasulo, Elizabeth, N. J., defeated Dan Looney, Cambridge, Mass., three rounds; 125-pound class, Earl Baird, Seattle, Washington, defeated Charles Beacher, New York City, three rounds; 135-pound class, Tommy Murphy, Kansas City, Mo., defeated James Sullivan, New York City, three rounds; 145-pound class, Daniel O'Connor, Dorchester, Mass., defeated Andrew O'Boyle, New York City, three rounds; 158-pound class, Eugene Brosseau, Montreal, defeated S. Lagonis, New York City, three rounds; 175-pound class, Ted Jamieson, Milwaukee, Wis., defeated John Gaddi, New York City, three rounds; heavyweight class, John Gaddi, New York City, defeated Joseph Burke, Toronto, Canada, two rounds, bout stopped by referee.

BOY SCOUTS OF AMERICA. The Boy Scouts of America form part of the world brotherhood of scouts several million strong. On February 8, 1918, the eighth anniversary of the incorporation of the Boy Scouts of America, there were 299,033 scouts properly registered in 13,886 troops, with 79,350 men council members and troop committeemen and scoutmasters. The ideals of the movement are efficient citizenship, service, and character building. "The Boy Scouts of America," the name under which the movement in the United States was incorporated on February 8, 1910, has as its honorary president, Woodrow Wilson, and as honorary vice-presidents, William H. Taft and Theodore Roosevelt. The active president is Colin H. Livingstone; the national scout commissioner, Daniel C. Beard; the treasurer, George D. Pratt; the chief scout executive, James E. West. A group of men brought together as a local council for the promotion of scout work receive a charter from the national organization. In many cases this council engages a scout executive to be leader of the scoutmasters in its district. The Scouts are organized in patrols and troops. Eight boys constitute a patrol, one being chosen as the patrol leader. Three or four patrols make up a troop. The scoutmaster is the adult leader of the troop. Any boy of any class or creed, over 12 years of age, is eligible to become a Scout. The initial requirements are that he take the Scout oath and honor the Scout law and know the significance of the badge and pass tests in the history of the flag and in knot tying. He is then a tenderfoot Scout. By meeting certain requirements he is in line to become a second-class Scout and first-class Scout. Scoutcraft includes instruction in first aid, life saving, tracking, signaling, cycling, nature study, seamanship, campcraft, woodcraft, chivalry, and all the handicrafts. It is a prime purpose of the Boy Scout Movement, abroad as well as in the United States, to teach boys that to create is better than to destroy. Splendid first aid and other humanitarian services have been rendered by the scouts in the present European war.

In the United States the Scouts have assisted in Liberty Loan and War Saving Stamp sales, in gardening and food conservation, as dispatch bearers for the government in distributing pamphlets for the Committee on Public Information, and have aided in the Red Cross, the Y. M. C. A., and other war service campaigns.

BRADY, JAMES BUCHANAN. An American capitalist, died in Atlantic City, N. J., April 13, 1917. He was born in New York in 1856, and after a public school education began life as a messenger boy in the offices of the New York Central Railroad. As a salesman for a machinery manufacturing firm he made a successful start in business and eventually he became an officer in a number of concerns, especially those manufacturing railroad cars and appliances. Business ability, for which he was less known than for his eccentricities, enabled him to build up a fortune of some millions. His fondness for jewels, particularly diamonds, and for the night life of New York kept him in the public eye. He was known popularly as "Diamond Jim" Brady, and always appeared, even by day, in an extraordinary array of precious stones. These were not always confined to his own person. He went so far as to equip his dog with sun-glasses set with rose diamonds and costing $6500. In 1912, after Mr. Brady had been treated at Johns Hopkins Hospital for a digestive disorder that threatened his life, he gave $200,000 to the institution to found the Brady Urological Clinic, with assurances of an annual $15,000 for maintenance. He also left it $300,000 in his will. Other bequests included jewelry valued at about $1,000,000 to friends, besides $150,000 in money, $50,000 to charities, and his residuary estate, valued at some $4,000,000 to New York Hospital to establish the James B. Brady Urology Foundation. Some of the most important railroad and business men in the country were among Mr. Brady's friends.

BRAZIL, UNITED STATES OF. A federal republic and by far the largest country of South America. The capital and largest city is Rio de Janeiro. The greater part of the country is undeveloped and much of it practically unknown to white men, but the natural resources throughout vast tracts are unquestionably immense. Energy and proper financial methods in the exploitation of the mineral deposits and, more particularly, in the development of agriculture, should place Brazil among the most prosperous countries of the world. Conditions and prospects there are well defined in a volume published in 1917: *Brazil: To-day and To-morrow* by L. E. Elliott.

AREA AND POPULATION. Estimates of area vary, but are near enough to permit the statement that Brazil covers almost 3,300,000 square miles. The planimetric calculation of the Brazilian ministry of agriculture shows perhaps the best tentative figure, 8,497,540 square kilometres (3,280,900 square miles). This area exceeds the area of Continental United States (without Alaska) by over 254,000 square miles. Our idea of the magnitude of Brazil's territorial extent may be further defined by noting that the 254,000 square miles is about equivalent to the combined areas of California and Oregon. Brazil consists of twenty states, the Federal District, and one territory. The population is supposed to be about 24,000,000. An estimate of about 26,500,000, relating to the year 1915, may be regarded as excessive. The census of 1890 returned a population of 14,333,915, and that of 1900 17,318,556. Little reliance can be placed upon published figures for the population of Brazilian cities. One estimate appearing in 1917 for Rio de Janeiro was 1,500,000, but this figure must not be taken seriously. The results of an official Brazilian calculation gave Rio 944,917 inhabitants on November 30, 1916; while an estimate of the Brazilian health department gave the city a population of 933,355 on January 31, 1917. It appeared from the report that the latter estimate comprehended the entire Federal District. The following figures for other cities are quoted from a pamphlet published by the Pan American Union in 1917: São Paulo, 400,000; São Salvador (Bahia), 280,000; Recife (Pernambuco), 250,000; Belém (Pará), 200,000; Porto Alegre, 150,000; Manáos, 60,000; Forteleza (Ceará), 50,000; Bello Horizonte, 50,000; Curitiba, 50,000; São Luiz (Maranhão), 50,000; Therizina, 50,000; Nictheroy, 50,000; Maceió, 40,000; Florianopolis, 30,000; Aracajú, 30,000; Cuyabá, 20,000; Victoria, 20,000; Parahyba, 20,000; Natal, 20,000; Goyaz, 16,000. Estimated population of Santos, 35,000.

Recorded immigration to Brazil from 1820 to the end of 1915 is 3,363,456. This number includes 1,361,266 Italians, 976,386 Portuguese, 468,583 Spaniards, 122,830 Germans, 103,683 Russians, 78,545 Austrians and Hungarians, 52,434 Syrians, etc., 28,072 French, 22,005 British, 15,608 Japanese, and 10,713 Swiss. Immigration has been retarded by the great war. The number of immigrants in 1913 was 192,684; in 1914, 82,572; in 1915, 30,287. Of the latter number, there were 15,118 Portuguese, 6895 Spaniards, 5779 Italians, 640 Russians (mostly Poles), and 514 Syrians.

EDUCATION. Illiteracy prevails, but education is encouraged and supported by both Federal and state governments. Elementary instruction is free, secular, and in some states nominally compulsory. Schools of all kinds are reported to number about 13,000, with an enrollment of about 750,000. There are a number of secondary, normal, special, and technical schools, while agricultural instruction is encouraged by all of the state governments. Brazil has no university, but there are 25 faculties which confer degrees. Among the law faculties should be mentioned those of Recife, São Salvador, and São Paulo; the medical schools of São Salvador and Rio de Janeiro are well known, and also the mining school at Ouro Preto. The people (except the uncivilized aboriginals) are almost wholly Roman Catholic, but church and state are separate, and the exercise of all religious forms is permitted. The language of Brazil is Portuguese.

PRODUCTION. The chief commercial product is coffee. Among other products of great importance are rubber, leather, cacao, yerba maté, tobacco, and sugar. In addition to these products should be mentioned rice, cotton, corn, manioc, bananas and other fruits, beans, and Brazil nuts. Brazil produces about four-fifths of the world's coffee, and the state of São Paulo over one-half. The principal coffee-producing states besides São Paulo are Rio de Janeiro, Espirito Santo, and Minas Geraes. The average annual production is upwards of 12,000,000 sacks (one sack = 60 kilograms = 132.377 pounds). Rubber is gathered in the forests of the Amazon basin, but the cultivation of the rubber tree is encouraged by the government. Cacao, in the production of which Brazil leads the world, is grown especially in the state of Bahia; sugar cane is produced chiefly in Pernambuco and other parts of the northeast; maté, chiefly in Paraná; cotton, largely in the northeast; tobacco, in Bahia and Rio Grande do Sul.

The live stock census of 1913 showed horses to the number of about 7,289,000, valued at $54,667,500; mules and asses, 3,208,000, $40,100,000; cattle, 30,705,000, $383,812,500; sheep, 10,653,000, $13,063,250; goats, 10,049,000, $12,561,250; swine, 18,399,000, $91,995,000; total value, $596,199,500. Since 1914 the frozen-meat industry has shown a notably increasing importance.

Parts of Brazil, especially Minas Geraes, are rich in minerals; but mining, in general, has not attained a satisfactory development. Brazil produces the greater part of the world's supply of monazite, but from 1913 to 1915 the export of monazite sand fell from 1437 metric tons to 439 tons. The output of manganese ore shows rapid increase, the export in 1915 being 288,671 metric tons; returns for a portion of 1916 show a much larger amount. The manganese ore goes largely to the United States, affording about four-fifths of the American supply. There is some mining of gold, gems, and a few other minerals.

Brazil's leading manufacture, that of cotton goods, has developed in the last twenty-five years so that now all but the finer grades are produced. Other manufactures of importance are flour, woolen goods, and beer.

COMMERCE. The following table shows the value of imports and exports in contos (that is, thousands of milreis) gold. The milreis is valued at 54.62 cents, and the conto accordingly at $546.20.

	1912	*1913*	*1914*	*1915*	*1916*
Imports ..	568,775	597,034	315,312	267,452	358,839
Exports ..	663,548	576,433	413,571	470,847	488,980

In thousands of American dollars, the trade is represented as follows:

	1912	*1913*	*1914*	*1915*	*1916*
Imports ..	307,934	326,100	172,224	146,082	195,998
Exports ..	362,430	314,848	225,892	257,177	267,081

Classified import values are shown below. The class "raw materials" includes "materials used in the arts and industries," as vegetable oils, materials for paints, etc. Values are given in contos.

	1913	*1914*	*1915*	*1916*
Live animals...	3,171	1,322	381	938
Raw materials..	125,004	65,393	70,528	106,216
Manufactures ..	334,980	152,817	95,949	152,063
Food and drink.	133,880	95,782	100,594	99,622
Total......	597,034	315,312	267,452	358,839

The leading articles imported include machinery and other iron and steel manufactures, railway materials, cotton fabrics, coal, flour, codfish, wine, arms, and ammunition, kerosene, and paper.

Exports are divided into three major classifications as shown below. Values are in contos.

	1913	*1914*	*1915*	*1916*
Animals and animal products..	29,613	23,114	37,819	56,290
Minerals and mineral products..	6,276	7,076	10,431	19,120
Vegetable products	540,544	383,381	422,598	413,570
Total.......	576,433	413,571	470,847	488,980

The reported export of coffee in 1913 amounted to 13,267,449 sacks of 60 kilos each (of which 4,914,730 to the United States); in 1914, 11,269,724 (5,532,081); in 1915, 17,061,319; in 1916, 13,039,000. Of the 1915 export, the United States took 7,194,594 sacks; France, 2,449,222; Sweden, 2,333,386; Netherlands, 1,486,994; Italy, 710,800; United Kingdom, 413,786. The exportation to Austria-Hungary decreased from 1,016,824 sacks in 1913 to 363,932 in 1914 and was nothing in 1915; that to Germany decreased from 1,865,632 sacks in 1913 to 656,369 in 1914 and was nothing in 1915. Another effect of the great war should be noted in this connection, namely, the increase of the coffee export to Sweden. The reported amount sent to Sweden was 212,034 sacks in 1913, 487,002 in 1914, and 2,333,386 in 1915.

Leading articles of export, besides coffee, are shown in the following table, in metric tons:

	1913	*1914*	*1915*	*1916*
Rubber	36,232	33,531	35,165	31,495
Cacao	29,759	40,767	44,980	42,720
Leather	....	31,442	38,324	46,390
Yerba maté....	65,415	59,354	75,885	73,552
Tobacco	29,388	26,980	27,096	21,293
Sugar	5,367	31,860	59,074	53,824
Cotton	....	30,434	5,228	1,071
Manganese ore.	122,300	183,630	288,671	503,130

In 1916 the export of Brazil nuts amounted to 197,647 hectoliters; beans, 45,594 metric tons; cottonseed, 11,762 tons; carnauba wax, 4167 tons; piassava nuts, 3561 tons; bananas, 2,980,271 bunches.

Imports by principal countries, in thousands of dollars:

	1913	*1914*	*1915*	*1916*
United States.....	51,238	30,213	46,858	76,908
United Kingdom...	79,801	40,958	82,029	89,952
Argentina	24,269	16,570	23,237	27,555
France	31,908	13,436	7,217	10,173
Portugal	14,313	8,785	7,236	9,088
Italy	12,353	7,083	6,448	6,849
Newfoundland	3,821	8,462	8,113	8,356
British India......	2,677	1,832	2,722	3,164
Uruguay	7,040	2,641	2,172	2,916
Sweden	1,428	842	1,289	2,556
Switzerland	3,840	2,149	1,546	2,488
Germany	56,987	27,767	2,255	86
Belgium	16,663	4,894	251	281
Austria-Hungary ..	4,923	1,746	193	1
Total, including others..	326,100	172,224	146,082	195,998

Exports by principal countries, in thousands of dollars:

	1913	*1914*	*1915*	*1916*
United States.....	102,460	92,253	107,524	125,395
France	38,647	18,591	29,285	43,142
United Kingdom...	41,660	32,750	31,096	31,120
Italy	4,063	6,763	8,073	16,513
Argentina	14,838	10,680	12,990	16,285
Netherlands	23,228	18,076	16,361	8,180
Sweden	3,191	5,187	23,187	7,437
Uruguay	5,161	3,905	4,489	7,142
Spain	1,808	1,286	1,552	2,197
Denmark	733	1,390	5,929	2,011
Portugal	1,587	2,020	2,361	1,520
Norway	482	1,517	7,614	1,430
Germany	44,348	22,510	....	....
Austria-Hungary ..	15,191	4,930	....	....
Belgium	8,085	3,613	....	....
Total, including others..	314,848	225,892	257,177	267,081

Imports to and exports from principal ports, in contos:

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
Rio de Janeiro....	111,987	158,545	81,064	87,155
Santos	71,878	95,878	214,667	216,458
Recife	18,839	21,827	10,468	11,807
São Salvador......	13,882	16,964	46,769	47,099
Belém	10,344	16,078	82,158	84,755
Porto Alegre......	8,823	12,165	781	1,518
Manáos	5,397	7,991	28,837	33,231
Victoria	511	293	10,491	10,079
Total, including others......	267,452	358,839	470,347	488,980

COMMUNICATIONS. Brazilian railways have been constructed chiefly to serve the settled seaports, penetrating the producing agricultural areas inland. The building of coastwise lines from town to town was undertaken later and this construction is comparatively small; in fact, it has not been greatly needed with the maintenance of good shipping service. Brazilian railways have been criticized for lack of coherence, but no other plan of construction could have well been followed. The reported length of railway in operation at the end of 1915 was 16,331 miles (26,282 kilometres). A monograph published by the Pan American Union in 1917 states that the "total extent of railways in Brazil is 14,596 miles." This figure perhaps relates to length of line rather than to length of track. The total is made up as follows: Federal lines, 2194 miles; private lines, 3232; leased lines, 5386; state lines, 3782; total, 14,596.

In 1917 there were a number of important railway developments in Brazil, which country was wide awake to the necessity of opening up the interior and developing its vast resources. In February, 1917, contracts entered into by the Brazilian government and the Brazil Northern Railway for the construction of the Tocantins Railway, were revised and during the year the company endeavored to open to traffic the second section from Alcobaca, sixty-five miles further. The first section from Cameta to Alcobaca, and the third section which extended from the second to Chambioaz, were to be built within six months from a date set by the government, while a branch line from Chambioaz to Santa Maria and the Tocantins was to be commenced six months after the completion of the third section. The Tocantins Railway, being near the coast and in a reasonably healthy country, did not present the usual difficulties of tropical engineering. An interesting concession made on August 16, namely to Alberto Alvarez de Azevedo de Castro of Rio de Janeiro for a line between the city of Cuyaba, the capital of Matto Grosso, to communicate with the Araraquara Railway, and thus afford direct communication between Cuyaba and the ports of Rio and Santos, continued under discussion in 1917. The length of the proposed extension was about 620 miles, and during the life of the concession, sixty years, no other line was to be built within the zone of twelve miles of each side of the roadbed, although branch lines for private use were permitted. Plans for the first section of sixty-two miles were to be submitted to the government before June 30, 1919, and construction was to be begun within one year from the date of approval. The new line was to be of metre-gauge (3.28 feet).

FINANCE. Brazil's monetary unit is the milreis, equivalent to 54.62 cents. Currency is government paper. The paper milreis has a par value of 32.444 cents, but its actual value fluctuates, being in 1917 about 25 cents. The "conto" is 1000 milreis, the conto gold being worth $546.20, and the conto paper about $250. Estimated revenue for 1916: 110,682 contos gold, 349,166 contos paper; estimated expenditure, 84,365 contos gold, 405,266 contos paper. Estimated revenue for 1917: 128,335 contos gold, 340,138 contos paper; estimated expenditure, 98,533 contos gold, 407,427 contos paper. Chief estimated receipts in 1917: import duties, etc., 70,400 contos gold, 57,000 contos paper; consumption taxes, 102,488 paper; national property and industries, 4292 gold, 100,182 paper. The largest departmental expenditures as estimated for 1917 were: finance, 73,653 contos gold, 123,875 contos paper; transportation and public works, 22,125 gold, 120,538 paper; war, 50 gold, 64,265 paper; marine, 180 gold, 36,817 paper. Public debt as reported for December 31, 1916: foreign, £112,332,968; internal, 864,436 contos paper; floating (March 31, 1916), 252,183 contos paper. Paper money in circulation in 1916, over 1,100,000,000 milreis.

NAVY. The only large, formidable vessels in the Brazilian navy are the dreadnoughts *Minas*

Geraes and *São Paulo*, the one completed in 1908 and the other in 1909. Each has a displacement of about 19,250 tons, a 9-inch armor belt, a main battery of 12 12-inch guns, and a nominal speed of 21 knots. The coast guards *Deodoro* (1898) and *Floriano* (1899) have each a displacement of about 3150 tons, a 14-inch armor belt, 2 9.2-inch and 4 4.7-inch guns, and a nominal speed of 14 knots. The scout cruisers *Bahia* (1909) and *Rio Grande do Sul* (1909) have each a displacement of about 3100 tons; their principal armament is 10 4.7-inch guns. The old protected cruiser *Barroso* (1896) displaces 3450 tons and carries 6 6-inch and 4 4.7-inch guns. There are also several torpedo cruisers, torpedo boat destroyers, torpedo boats, river gunboats, 3 submarines, etc. The complement is reported to be over 13,000 men.

GOVERNMENT. The legislative power is exercised by a congress of two houses, the Senate and the Chamber of Deputies. It consists of 63 members, 3 for each state, and the Federal District; they are elected for nine years by direct vote. The chamber consists of 212 deputies, who serve for three years. The executive authority is vested in a president elected for four years by direct vote and ineligible for the next term. He is assisted by a cabinet of seven members. The president in 1917 was Wenceslão Braz Pereira Gomes, inaugurated November 15, 1914, in succession to Marshal Hermes da Fonseca; vice-president, Urbano dos Santos da Costa Araujo.

The Brazilian states have elective governors and legislatures and enjoy a large degree of autonomy. The Federal District, containing Rio de Janeiro, is administered by a prefect, who is appointed for four years by the president, and by a council, elected by the voters of the district.

HISTORY. The movement against Brazilian neutrality continued in the beginning of the year and was intensified by the German submarine policy. On February 8 the government warned Germany that it did not consider the submarine blockade effective and would hold Germany responsible for any damage to Brazilian merchant vessels in violation of International law. The same note was sent to Austria. The warning to Germany was renewed a week later. The German government declared its intention of pursuing its submarine policy, but suggested diplomatic negotiations on the subject of such sinkings as might occur. After the sinking of the *Parana* by a German submarine which was reported early in April the Brazilian government handed his passports to the German minister (April 10) and a note was addressed to the press to the effect that from the inquiry into the torpedoing of the *Parana* it was established that she had received no summons to stop, that she was torpedoed by the submarine and shelled five times, and that no assistance had been rendered to the crew. In view of these circumstances and of the previous offenses of which complaints had been made to the German government the government of Brazil broke off relations with Germany. German vessels in Brazilian waters, forty-six in number, were subsequently seized. There was a strong movement for a declaration of war, and after Señor Nulo Pecanha, who was strongly pro-Entente, had succeeded Dr. Lauro Muller in the foreign office on May 5, the drift toward war became more rapid. On May 29 the Chamber of Deputies authorized the president to revoke the proclamation of neutrality when in his opinion the time had come for a declaration of war. Meanwhile, many anti-German demonstrations had been reported, notably at Porto Alegre, where Germans were said to have tried to blow up bridges. Toward the latter part of May it was learned that the Brazilian vessel *Tijuca* had been sunk off Britanny. Thereupon, on May 24, the Minister of Foreign Affairs presented to Congress a message signed by President Braz, saying that the sinking of Brazilian merchant vessels by the Germans made it necessary for the government to take defensive measures against the submarine warfare. The message further suggested the seizure for the present but not the confiscation of German vessels interned in Brazilian ports. It explained that the Brazilian government had been obliged to oppose the policy of Germany in the matter of a submarine blockade of neutrals. It had protested against this policy at the time and after the sinking of the Brazilian steamer *Parana* it had broken off diplomatic relations with Germany. Now came the news of the sinking of a second steamer without warning. The government must therefore take some definite action. He recommended the revocation of the neutrality proclamation. The Chamber passed the revocation of neutrality a few days later (May 28). See WAR OF THE NATIONS, *Diplomacy of the War*.

On January 1, 1917, a new civil code went into effect.

BREAD. See FOOD AND NUTRITION.

BREAD ORDER. See FOOD CONTROL.

BREEDING. See STOCK RAISING AND MEAT PRODUCTION.

BRETHREN, CHURCH OF THE. A religious denomination known also as the Dunkers or Dunkards. There are three branches: the Conservatives, the Progressives, and the Old Order. There are also the Seventh Day German Brethren, numbering in 1917 about 300 communicants, 15 churches, and 6 ministers. The Conservatives, the largest branch, numbered in 1917 about 100,000 communicants, about 1000 churches, and 3172 ministers. The Progressives had in 1917 about 24,000 communicants, 210 churches, and 300 ministers. The Old Order had about 3500 communicants, 70 churches, and 216 ministers. The Conservative group maintained 10 schools, of which the Bethany Bible School at Chicago was devoted entirely to study in the Bible. The Sunday schools of the Conservative group in 1917 numbered 1252, with 12,698 officers and teachers, and 130,891 scholars. It had a publishing house at Elgin, Ill., where a large number of books and papers were issued. It had missions in Sweden and Denmark, India, and China. The Progressives had a publishing house at Ashland, Ohio.

BREWING. See LIQUOR REGULATION; LIQUORS.

BRIDGES. In bridge construction the year 1917 was marked by the completion of three notable structures, namely, the bridges at Quebec, Sciotoville, and Metropolis, which gave to America the greatest of each type of steel bridge that so far had been developed. The superiority in every branch of steel bridge work that thus had been achieved by American engineers was the result of careful and original design, coupled with systematic experiment and test, and the utilization of metallurgical developments and construction and other experience. Thus, the Quebec Bridge, with its interesting and dramatic history, in 1917 ranked at the head of the world's cantilever spans, exceeding by some 100 feet the famous Forth Bridge, which for thirty years had stood unchallenged among the important bridges of the world. In simple truss construction, the Metropolis bridge described in the YEAR BOOK for 1916 marked the culmination of a type characteristically American, in which steady progress also had been made. The long-span, pin-connected construction as shown in the Metropolis bridge was a logical development of the work of American engineers for over half a century. Among the long-span continuous bridges in which old ideas had been developed and utilized, the Sciotoville marks an achievement in still another field. These three bridges, together with the great East River suspension bridges, clearly indicated the supremacy of American construction, which is also maintained as regards steel viaducts, bascules, lift bridges, and swing bridges.

QUEBEC BRIDGE. On September 20, 1917, the 640-foot suspended span of the great Quebec Bridge across the St. Lawrence was successfully hung on the cantilevers, and bolted into its final position. This bridge is not only the greatest of cantilevers, but also has the greatest clear span and its construction has been attended by various remarkable features, referred to from time to time in the YEAR BOOK, especially in the issues for 1907 and 1916.

On August 29, 1907, the south half of the structure, while in course of erection, crumpled under its own weight, causing a great loss of life. This accident led to the development of a new truss design, and its fabrication was attained by shopwork of high precision and finish. The later design represented the best features of comparative bridge building, and the general scheme of erection was developed in a courageous way. Unfortunately, on September 11, 1916, while the suspended span, connecting the two cantilevers, was being hoisted into position, a failure occurred, and the entire structure fell to the bottom of the river. In 1917, however, the work was attended with every success, and the greatest single fabricated part of a structure to be placed in position was assembled, floated 3½ miles on scows, and then hoisted 150 feet by hydraulic jacks and lifting chains. The new span duplicated the former construction, being 640 feet in length, 88 feet in width, and weighing 5400 tons. About 75 per cent of the steel was nickel alloy, and it was rolled, cut, and assembled on false-work in 10½ months. The same site at Sillery Cove, 3½ miles down the river, was employed, as well as the same false-work and end supports, on which the span had been erected in the previous year. Even the same six scows before used for floating were also employed. The essential difference in the 1917 arrangement over that of the previous year was a new arrangement of the girders, and the rebuilding of the bearings used between the chains and the span corners.

Early on the morning of Monday, September 17, 1917, the scows bearing the structure were floated out into the river, and about 9 o'clock. the lifting chains began to take up the load, and the upward journey of 150 feet was begun. By means of hydraulic jacks, 75 successive lifts were made, and at the end of the seventy-fifth stroke, at 3.25 in the afternoon of Thursday, September 20, the first of the eight pins connecting the eye-bars was driven, and by 4 o'clock all of the pins were in position, and the great work was accomplished. The jacks were then lowered to release the lifting gear, and the erection equipment was dismantled. The pin-and-socket wind-stress connections between the span and the cantilever were brought forward, and everything was arranged for completing the work. This included the erection of the span floor system, the laying of the footwalks, and the riveting of the lateral-bracing connections. By December 31 the structure was practically completed.

The Board of Engineers of the Quebec Bridge, representing the Dominion government, were C. N. Monsarrat, chief engineer and chairman, Ralph Modjeski, and H. P. Borden. The bridge was built by the St. Lawrence Bridge Company, under the general direction of G. H. Duggan, chief engineer, G. F. Porter, engineer of construction, and S. P. Mitchell, consulting engineer of erection. The actual lifting operations were in charge of W. B. Fortune, erection superintendent of the St. Lawrence Bridge Company. The design, construction, and erection of the Quebec Bridge figured extensively in current engineering literature, and a final discussion of the placing of the suspended span is well summarized in the *Engineering-News Record* (New York) for September 27, 1917.

SCIOTOVILLE BRIDGE. During the year the Sciotoville continuous truss bridge with its two 775-ft. spans was completed. The Ohio span of this bridge was erected on false-work and was completed late in January. The Kentucky span involved cantilever construction with temporary supports, a creeper traveler moving along the top chord being used to carry the work forward. This work developed without structural accident of any kind, and as fast as the material was placed it was riveted.

MANAYUNK BRIDGE. A notable concrete arch bridge across the Schuylkill River on a reverse curve was built during the year by the Pennsylvania Railroad, replacing the old bridge which had become too light for traffic requirements. The total length of the new structure was approximately 1200 feet, and it comprised at the north approach a steel through girder span followed by a massive pier of 40 ft. length, two 105-ft. spans, a 120-ft. span, three main 150-ft. spans over the river, one 120-ft. span and finally a small terminal pier and a deck-plate girder approach viaduct. The rise of each arch was one-third the span length, except the 105-ft. span which had a rise of 30 feet. The concrete construction was adopted in order to secure a pleasing architectural appearance as well as on account of the high cost of steel.

ST. LOUIS BRIDGE. The last girder of the three-mile east approach of the St. Louis Municipal Bridge over the Mississippi at East St. Louis, Ill., was placed on May 1, 1917, so that only the timber deck and tracks completing the railway section remained. The higher section of the bridge and approach had been formally opened on January 20.

JAMES RIVER BRIDGE. On January 25, 1917, competitive bids were received for a concrete arch viaduct and a steel viaduct for a bridge over the James River at Richmond, Virginia.

The cost of the concrete arch was $477,774 as compared with $492,435 for the steel viaduct, which involved a plate girder and steel tower construction on concrete pedestals. The contract was awarded for the concrete arch bridge, the construction of which was begun during the year. It was to be a bridge 32 ft. 6 in. wide and 2278 ft. long including abutments. The base of the rail was at elevation 100 above the river level and there were 12 arches of 116 ft. clear span and 58 ft. rise. Three arches of 122 ft. clear span and 58 ft. rise, three of 60 ft. clear span and 30 ft. rise, and 70 ft. of abutment approaches. The main-span piers were 14 ft. thick at springings and with an abutment pier of 20 ft. in thickness for each group of three arches. The abutment and 60 ft. arches had solid earth-filled spandrels while the main arches were of open spandrel designed with slab floor system. This bridge is discussed in the *Engineering News-Record* for July 12, 1917.

Market Street Bridge, Chattanooga. The Market Street Bridge at Chattanooga, Tenn., a 300-ft. double-leaf rolling-lift and bascule span completed in 1917 and formally opened on November 17, was notable for some novel features of erection. This bridge was about 2300 ft. in length, including the approach fills, and had five reënforced concrete arches of 180-ft. span and two of 165-ft. besides nine 40-ft. concrete slab spans, in addition, of course, to the 300-ft. steel drawspan. This drawspan was erected as a cantilever in a closed position, one leaf being erected complete in the first place and the same equipment and method was followed with the south leaf.

San Francisco Bridge and Tunnel. Various plans for bridges and tunnels across San Francisco Bay had been put forward in the past, and in 1917 a new plan for a combination bridge and tunnel between Oakland mole and Folsom Street pier, San Francisco, was proposed. The bridge was to be built close to the water on each side of the bay with appropriate wharves and piers for ships to dock, and where a tunnel arrangement in the centre would provide a clear channel 3000 ft. wide and would consist of three tubes, two for electric trains, and one for vehicular traffic. The roadways would enter the tunnel from the bridge at points to be marked by lighthouses. The distance from the water line to the top of the tubes was to be approximately 45 ft. The estimated cost of the project was $26,000,000.

Proposed Bridge at New York. In the annual report of the Department of Plant and Structures of the City of New York for 1916 which was published in 1917, there was proposed a new bridge structure across the East River from First Avenue and 125th Street, Manhattan, to Second and Potter aves. in Queens with a branch connecting the Bronx at St. Ann's Ave. and Southern Boulevard. The proposed bridge was to be located alongside of the Hell Gate arch and would be approximately 15,000 ft. long. The construction suggested was a large cantilever steel span in the Hell Gate channel, while for the approaches in Queens and on Ward's and Randall's Islands, including the crossing at Little Hell Gate, reënforced-concrete would be used. A lift span would be employed in the Manhattan connection extending from Randall's Island to First Avenue, and by the use of inclined approaches at Randall's and Ward's Islands, these points would be given direct vehicular communication with the mainland. The estimated cost of the entire structure at normal prices for materials and labor would be about $10,500,000. No action was taken on this by the city authorities.

Missouri River Bridge Moving. At St. Joseph, Missouri, an interesting accomplishment was the movement of three 297-ft. 1000-ton truss spans of the Missouri River bridge 136 ft. 9 in. to new piers which took place on November 14. These piers were built between the old ones and the spans were moved longitudinally to the new supports. A standard gauge railway track was constructed on false work under each truss and heavy railway car trucks on each of which a 300-ton hydraulic jack was mounted, were employed. Twelve power trucks were used with each span with two idler trucks at the middle. The 3000-ton load was moved in 13 minutes. This interesting work was fully discussed in *Engineering News-Record* for October 25, 1917.

A New Niagara Bridge. To replace the Niagara cantilever bridge of the Michigan Central R. R. at Niagara Falls, N. Y., a steel arch of about 560-ft. span with a rise of about 132 ft. from the hinges to the bottom chord was planned during 1917, although no time was set for the construction in view of war conditions. The new steel arch bridge was to carry three tracks and was to take the place of the former arch, famous as being the first cantilever bridge to be built in the United States.

European Work. In Europe, the attention of bridge engineers was in large part occupied by military construction and destruction. The French engineers in particular were active in rebuilding the various structures destroyed by the Germans, and masonry arches were replaced by concrete in many cases, where timber and cut stone were scarce. In some cases, it was possible to rebuild 60-ft. masonry arches by the use of old iron in the form of old steel rails with a minimum of timber. In other cases, girder bridges were rapidly installed in connection with the railway reconstruction and the facilities for communication were increased.

Willamette Run Bridge. During the year plans were being prepared for a steel bridge across the Willamette River at Salem, Oregon, and after the matter had been in discussion and controversy for more than three years a new project was to have a 24-ft. roadway and a 5-ft. sidewalk on either side and involved about 650 tons of steel, 100 ft. of reënforced-concrete approach, 250 ft. of fill approach, and 750 ft. of first-class wooden approach.

Steubenville, Ohio, Bridge. A single track steel bridge 1120 ft. and 110 ft. deep over the main piers across the Ohio River at Steubenville, Ohio, exhibited some new developments in bridge erection methods. This new cantilever bridge connected the by-products coke plant on the West Virginia side of the river and the furnaces and mills of the Labelle Iron Works on the Ohio side. It consisted of a cantilever made up of two anchor arms of 230 ft. each, two cantilever arms of 180 ft. each, and a suspended span of 300 ft., the distance from centre to centre of tower piers being 660 ft. The weight of steel exclusive of approaches is 4088 tons. The erection of this bridge was accomplished exclusively by locomotive trains equipped with booms and operated from each end of the bridge, the design being made with the proposed plan of erection in view. The final adjustment incidental to swinging the suspended span was accomplished by the use of hydraulic jacks instead of the use of wedges and screws.

A LONG PLATE GIRDER. A plate girder bridge with a girder 131½ ft. long over all, 10 ft. deep and weighing 105 tons was set in place November 11 by the New York Central Railroad on the West Shore tracks near New Durham, N. J., at the crossing of the Northern Railroad of N. J.

This new girder was erected by two large wrecking cranes, one of 150-ton capacity and the other of 120-tons. The long girder was substantially normal except for its size. The web was 120 inches deep and the top flange was of four-angle section but the bottom flange had only the usual pair of flange angles and was fitted with six cover plates instead of five as on the top flange. The web stiffeners were 7 by 3½ in. angles, the floor-beam connections 8 by 6 in. crimpled over the flange angles between the flange side plates. The flange cover plates were each about 5 ft. longer than the theoretical length, the extra length being utilized to splice the cover plates lying below.

THAMES RIVER BRIDGE. In August, 1917, the construction of the piers and abutments of the new Thames River bridge at New London for the New York, New Haven and Hartford R. R. was completed. The westerly three piers were sunk by open dredging, the depth of the two adjacent to the channel being 130 ft. below water. The east pier was a pneumatic caisson pier with three circular caissons. The total cost of the work exceeded a million dollars. The new bridge will be formed of spans from west to east of 185 ft., 330 ft., 212 ft., 330 ft., and 330 ft. respectively. The 212-ft. span was to contain a bascule draw. Contracts had been awarded for the silicon steel which was to weigh about 5525 tons. The old Thames River bridge, which was to be turned over to the State of Connecticut for highway use, contained 503 ft. swing span and at the time of its construction in 1889, it was the longest swing span in existence.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. See ADVANCEMENT OF SCIENCE, BRITISH ASSOCIATION FOR THE.

BRITISH COLUMBIA. A province of Canada. It extends westward from Alberta to Alaska and the Pacific Ocean. The estimated area is 355,855 square miles. The 1911 census showed a population of 392,480, the increase over 1901 being 119.68 per cent. In 1911, the city of Vancouver had 100,401 inhabitants; Victoria, the capital, 31,660; New Westminster, 13,199; Nanaimo, 8306; Prince Rupert (now western terminus of the Grand Trunk Pacific Railway), 4184.

The province has a legislative assembly of one chamber; it consists of forty-seven members elected by direct vote for four years. The executive authority rests with a lieutenant governor, appointed by the governor-general of the Dominion; he acts through an executive council, or responsible ministry, of eight members. Lieutenant governor in 1917, Frank Stillman Barnard; premier, H. C. Brewster.

BRITISH EAST AFRICA. That part of East Africa consisting of the Uganda Protectorate, the East Africa Protectorate, and the Zanzibar Protectorate. See these titles.

BRITISH GUIANA. A British colony on the northeast coast of the South American continent, extending from east to west about 270 miles, and from north to south about 540 miles. It includes the settlements of Demerara, Essequebo, and Berbice, and is bounded on the east by Dutch Guiana, from which it is divided by the Corentyn River, on the south by Brazil, on the west by Venezuela, and on the north and northeast by the Atlantic Ocean. Its area is about 90,277 square miles, extending from 9° to 1° N. lat., and from 57° to 61° W. long. About 130 square miles only are under cultivation.

	1909-10	*1911-12*	*1912-13*	*1914-15*
	£	£	£	£
Imports ...	1,774,457	1,703.355	1,694,155	1.968,214
Exports	1,985,387	1,798,597	2,103,120	3,336,338
Revenue ...	540,269	580,446	608.633	586,598
Expenditure.	546,711	590,745	592,532	622.025
Shipping * .	897,864	921,385	1,030,582	943,876

* Tonnage entered and cleared.

BRITISH HONDURAS. A colony on the east coast of Central America, bounded on the north by Yucatan, on the west by a straight line drawn from the rapids of Gracias a Dios on the Sarstoon River to Garbutt's Falls on the Belize River, and thence due north to the Mexican frontier, on the south by Guatemala, and on the east by the bay of Honduras. It lies between 18° 29′ and 15° 54′ N. latitude and 89° 10′ and 87° 50′ W. longitude.

The area of the colony is 8598 square miles, including Albion Island in the Hondo River (about 26 square miles), and Ambergris, St. George's English, Turneffe and other Cays, 212 square miles, a large portion of the latter being mangrove swamps without any soil. It is estimated that about 80 square miles are under cultivation.

	1911-12	*1912-13*	*1913-14*	*1915-16*
Imports	£593,372	£718,809	£634,769	£441.730
Exports	552,091	587.096	642,613	459,601
Revenue	102,431	111.143	121,480	106.570
Expenditure ..	109,490	132.488	125,274	114,205
Shipping * ...	588,367	630,064	816,858	803.181

* Tonnage entered and cleared.

BRITISH INDIA. See INDIA, BRITISH.

BRITISH NEW GUINEA. See PAPUA.

BRITISH NORTH BORNEO. The territory under the jurisdiction of the British North Borneo Company (incorporated by Royal Charter under date of November 1, 1881), now known as "the state of North Borneo," comprehends the whole of the northern portion of the island of Borneo from the Sipitong River on the west to lat. 4° 10′ N. on the east coast, together with adjacent islands; it is held under grants from the sultans of Brunei and Sulu, and contains an area of 31,000 square miles with a coast line of about 900 miles. It extends from 115° 20′ to 119° 20′ E. long., and from 4° 10′ to 7° 25′ N. lat. The southern boundary was settled by a convention at London June 20, 1891.

The principal stations of the company are at Sandakan, Lahad Datu, and Tawao on the east, Kudat on the north, and Jesselton on the west. At each of these there are excellent harbors, especially at the first named, which is situated in a magnificent bay some fifteen miles in length, with an average breadth of five miles. It is 1000 miles from Singapore, 1200 from Hong Kong, and 1600 from Port Darwin. The headquarters of the administration is at Jesselton. Inland stations are at Labuk, Kotabelud, Tuaran, Tambunan, Kaningau, Tenom, Beaufort, Pensiangan, Lamag, Papar, Putatan, and Ranau.

BRITISH SOMALILAND. See SOMALILAND PROTECTORATE.

BRITISH SOUTH AFRICA. See SOUTH AFRICA, UNION OF.

BRITISH WEST AFRICA. The following British colonies and protectorates in western Africa, regarded collectively: Nigeria, consisting of colony and protectorate; Gold Coast, consisting of Gold Coast colony, Ashanti, and the Northern Territories; Sierra Leone, consisting of colony and protectorate; Gambia, consisting of colony and protectorate. See these separate titles.

BROOKE, SIR CHARLES JOHNSON, Rajah of Sarawak. Ruler of a British protectorate on the northwest coast of Borneo, died at Cirencester, England, May 17, 1917. His name was originally Charles Anthony Johnson. Brooke was his mother's maiden name. He was born in 1829 at Benow Vicarage, Somerset, and became a midshipman in the navy at 12. In 1852 he resigned his naval commission to serve under his uncle, Sir James Brooke, the noted first Rajah of Sarawak, who after many years was still engaged in the task of bringing order to a country accustomed to piracy and head hunting. In 1857 came a crisis when Chinese pirates entered Kuching, the capital, and stormed the Rajah's palace. While his uncle escaped, by swimming a river at night, Charles Brooke rallied a few natives and annihilated the invaders.

After he became ruler, in 1868, on the death of the first Rajah, he acquired much new territory by purchase and voluntary submission of the people, and developed the country's trade in pepper and gold. Sarawak was originally 7000 square miles in extent; it is now 57,000 square miles. Although Sarawak was formally made a British protectorate in 1888, at which time Brooke was created G.C.M.G., the Rajah continued to be virtually absolute monarch, with a few hundred Europeans and some 500,000 natives as subjects, and 40,000 square miles of territory. Under him were British civil service officials and native chiefs. In 1904 Edward VII recognized the Rajah as a Prince of the East. In his old age Sir Charles lived mostly in England, at Cirencester, and in Italy, at a villa near Genoa. His son, Charles Vyner Brooke, had been his assistant since 1897 and had been the active head of the government (known as Rajah Mudah) for some time before his father's death made him actual ruler.

BROOKLYN INSTITUTE OF ARTS AND SCIENCES. An institution founded in 1824 and reincorporated in 1890. It consists of four departments; a Department of Education; Department of Museums, including the Brooklyn Museum and the Children's Museum; Department of Botanic Garden; and Department of Biological Laboratory. The Department of Education, Charles D. Atkins, Director, offers addresses, lectures, courses of instruction, concerts and meetings. Many important men are secured as speakers and the best artists provide the concerts. Nominal fees are required as payment for the privileges. One important feature of the educational system of the Institute is a school of pedagogy. The Brooklyn Museum, William H. Fox, Director, is famous for its collections in three departments—art, ethnology, and natural science. Supplementing this work is that of the Children's Museum and Library. The Brooklyn Botanic Garden, Dr. C. Stuart Gager, Director, has developed rapidly during the few years of its existence, and in 1917 ranked among the leading Botanic Gardens of the country. The Biological Laboratory, Dr. Charles B. Davenport, Director, at Cold Spring Harbor, N. Y., founded in 1889 under Institute auspices, became a Department of the Institute in 1917. At the close of the year 1917, the entire membership in all Departments, was 9600. The total number of persons who took advantage of the varied departments of the Institute was 871,456 in 1916-17, as compared with 6900 in 1887-88. For the same years the receipts were respectively $385,748.04 and $4456.70 and the permanent funds $942,400.51 and $37,000. There are branches of the Institute at Jamaica and Huntington, Long Island. President of the Board of Trustees, A. Augustus Healy.

BROWN UNIVERSITY. An institution of higher learning, founded in 1764 and located at Providence, R. I. Students in the fall of 1917 numbered 916. There were 235,000 volumes in the library. The departments of Brown University include a Woman's College. President, William H. P. Faunce, D.D., LL.D.

BRUSSILOF EXPEDITION. See POLAR RESEARCH.

BRYCE, LLOYD (STEPHENS). An American diplomat, died in New York City, April 2, 1917. He was born in Flushing, Long Island, in 1851, and was brought up at Georgetown, D. C., where he attended the Jesuit College. After further preparation in New York, he entered Christ Church, Oxford, in 1869, took the B.A. and M.A. degrees, and returned to study law at Columbia University. His first important public office was that of postmaster general of New York State, with rank of brigadier-general, to which Governor Hill appointed him in 1886. From 1887 to 1889 he served in Congress as a Democrat. In the latter year Allen Thorndike Rice, one of the owners of the *North American Review*, bequeathed his interest in this periodical to General Bryce, who, after purchasing the remaining interests, conducted it till 1896. During this period, which was one of expansion for the *Review*, Gladstone, Bismarck, and other famous men on two continents contributed to its pages. In 1911 President Taft appointed General Bryce Minister to the Netherlands and Luxemburg. This post he retained till 1913. He furthered the building of the Peace Palace at the Hague and was a delegate to the Opium Conference of 1913 and honorary vice-president of the Conference on Bills of Exchange. He was the author of essays, articles, and of these novels: *Paradise; A Dream of Conquest; An Extraordinary Experience, or the Ro-*

mance of an Alter Ego; Friends in Exile; and Lady Blanche's Salon.

BRYN MAWR COLLEGE. A non-sectarian college for women founded in 1885 and located at Bryn Mawr, Pa. Students in the fall of 1917 numbered 484 and there were 61 members of the faculty. There were 82,000 volumes in the library. President, Miss M. Carey Thomas, LL.D.

BUCHNER, EDUARD. A German chemist, died August 26, 1917, of wounds received while fighting at the front as major in the German army. He was born in Munich in 1860, was educated at the universities of Munich and Erlangen, was appointed lecturer in chemistry at Munich in 1891, professor of chemistry at Kiel in 1893, at Tübingen in 1896, and at the Agricultural College of Berlin in 1898. The Nobel prize for chemistry was awarded him in 1907, and he became professor at Breslau in 1909. In 1910 he was made a Privy Councillor. Buchner's fame as a chemist is based on his discovery that the liquid obtained by crushing yeast with fine quartz sand and subjecting the mass to a pressure of several hundred atmospheres possesses, like yeast itself, the power of setting up "fermentation" in solutions of maltose, grape sugar, invert sugar, etc. This proved that the alcoholic fermentation of sugars is caused immediately, not by the *physiological processes* going on in the organism of the living yeast, but by the purely *chemical action* of an enzyme ("zymase" or "endotrypsin"). He wrote, jointly with his brother, Hans Buchner, *Die Zymasegährung* (Munich, 1903).

BUCKWHEAT. Under the stress of war conditions buckwheat assumed a more important place among the crops of the United States in 1917. This was largely due to the fact that its short period of growth and its capacity to produce fair yields on soils of medium fertility make it a desirable catch crop valued for the food and feedstuffs material that it produces. Estimates given out by the United States Department of Agriculture placed the 1917 area at 1,006,000 acres as against 828,000 acres the preceding year and the largest since 1869. The production was estimated at 17,460,000 bushels, or 5,798,000 bushels more than in 1916 and 946,000 bushels above the average for the five years 1911-1915. The average yield per acre was 17.4 bushels, or 3 bushels under the average for this 5-year period. The average farm value on December 1 of 160.1 cents per bushel constituted a record price and the total value of the crop on this basis, amounting to $27,954,000, was also unprecedented. As in previous years, New York and Pennsylvania were by far the leading states in acreage and yields, producing over one-half of the entire crop of the country. The Canadian buckwheat crop was estimated at 7,189,000 bushels and the total value at about $5,000,000, the quality being rated at 63 per cent of perfect.

BUENOS AIRES. See ARGENTINA, *Area and Population.*

BUFFALO BILL. See CODY, WILLIAM F.

BUILDING OPERATIONS. Building in the United States in 1917 suffered greatly from war and financial conditions. The high cost and shortage of structural materials, together with labor conditions, developed from the opening of the year so that in the latter months, builders and contractors were unable in many cases to proceed with work under way or to undertake new work with any assurance of being able to complete it within a definite time or a definite cost. At the beginning of the year much building was under way on account of factories whose business had been expanded by the war conditions. It was true that costs of materials and labor were mounting, but even under such conditions much work was being undertaken. With the entry of the United States into the war, conditions changed, and with various shortages and lack of transportation, building tended to decrease. Nevertheless, throughout the country, there was considerable activity as shown by the accompanying returns that may be considered as typical.

According to *Dun's Review* permits taken out for new construction at 75 representative cities in the United States called for the expenditure of $591,468,244, as against $853,426,106 in 1916, a decline of 30.7 per cent. The tendency toward contraction was especially noticeable during the latter part of the year. The figures for 1917 and 1916 are given in the accompanying table.

NEW YORK. The showing at New York City was very unsatisfactory, permits granted at that centre amounting to only $83,370,847, a falling off of 56.2 per cent as compared with the $190,771,532 of the previous year. The large figures of 1916, however, were, to a large part, accounted for by a change in the building code, which resulted in the extensive filing of plans before the new law went into effect.

In the Borough of Manhattan, New York City, the estimated costs for plans for 321 new buildings filed at the Bureau of Buildings, during 1917, aggregated $31,069,625, as against $114,690,145 for 564 new buildings during 1916. During the earlier months of the year, the building industry increased its operations by about $5,000,000 over the same period in 1916, but after the declaration of war and the period of financial uncertainty, construction steadily decreased. This was also due to the difficulty in obtaining materials, and found expression in a remarkable decrease toward the end of the year. Thus the estimated cost of new buildings during the month of December was $549,000, compared with $1,892,800 in November and $4,022,850 in December, 1916. This was a decrease of about $3,500,000 from December, 1916, and about $1,300,000 from November. In the Borough of Manhattan, there was also a corresponding decrease in alterations. The estimated cost of alterations during 1917 was $13,669,644, of which $1,241,655 was called for by specifications filed in December. The total for 1916 was $19,387,899, of which $1,104,730 was called for by December plans.

Only eighteen of the cities listed in *Dun's Review* reported any gain over 1916, and in no instance was the improvement especially significant. On the other hand, there was a sharp falling off at Boston, Philadelphia, Chicago, Detroit, Louisville, Milwaukee, Minneapolis, Pittsburgh, Portland, Ore., Rochester, St. Louis, St. Paul, Springfield, Mass., Toledo and Washington. This resulted in a pronounced loss in the aggregate of all cities outside New York, the total amounting to $508,097,397, as against $662,515,574 in 1916, a decrease of 23.2 per cent.

COMPARATIVE STATISTICS IN U. S. The activity in building and proposed construction

Year	*1917*	*1916*
Akron	$14,932,778	$10,958,718
Albany	2,363,944	3,600,133
Allentown	1,215,942	2,238,895
Atlanta	5,006,855	3,755,663
Baltimore	10,145,626	13,965,479
Binghamton	1,723,889	1,882,196
Birmingham	1,861,973	2,233,155
Boston	22,621,449	29,791,342
Bridgeport	4,667,086	6,974,639
Buffalo	10,115,000	12,358,000
Canton	2,741,905	3,583,780
Chicago	64,254,105	112,825,150
Cincinnati	10,451,315	10,919,215
Cleveland	30,483,600	32,108,255
Dallas	3,573,139	4,284,238
Davenport	982,983	1,017,395
Dayton	4,288,501	3,206,815
Denver	4,292,020	4,038,840
Des Moines	2,722,052	2,308,924
Detroit	39,676,690	51,068,310
Duluth	4,630,420	3,615,941
Evansville	1,071,759	1,205,482
Fort Wayne	3,549,717	3,478,281
Fort Worth	1,844,757	2,678,089
Grand Rapids	1,810,500	3,519,245
Hartford	7,739,550	6,511,666
Houston	2,955,601	2,586,649
Indianapolis	7.103.028	8,934,694
Jacksonville	2,093,965	1,558,944
Kansas City	10.108,414	11,563.408
Lincoln	1,407,628	1,982,119
Los Angeles	16,925,728	14,905,169
Louisville	1,742,245	3,853,140
Memphis	2,626,445	3,290,060
Miami	1,471,549	2,060,673
Milwaukee	11,662,259	15,016,552
Minneapolis	9,257,285	22,935,290
Nashville	1,093,535	3,621,020
Newark	9,337,112	8.796,581
New Haven	5,644.869	5.082,550
New Orleans	2,862.899	3,077,604
Norfolk	1,705,738	2,857,208
Oklahoma	2,732,281	1,985,934
Omaha	7,717,530	7,226,127
Peoria	$2,115,058	$2,215,190
Philadelphia	34,004,730	49,896,570
Pittsburgh	11,464,204	14,254,810
Portland, Me.	669,343	1,653,342
Portland, Ore.	3,670,663	6,417,190
Reading	912,875	1,402,725
Richmond	4,416,839	4,629,245
Rochester	6,719,620	9,379,467
St. Joseph	1,135,648	1,206,121
St. Louis	12,546,332	15,443,102
St. Paul	7.090,990	10,917,745
Salt Lake	2,465,245	2,725,935
San Francisco	18,531,200	18,918,584
Savannah	646.505	1,245,993
Seattle	7,482,225	8,904,680
South Bend	2,031,429	1,213,542
Spokane	2,196,655	1,632,382
Springfield, Ill.	873,100	1.466,832
Springfield, Mass.	4,079,612	7,001,032
Syracuse	4,252,481	4,297,846
Tacoma	1,158,657	1,569,637
Toledo	7,244,546	9,692.772
Trenton	1,804,770	2,231,390
Troy	740,456	779,974
Utica	1,444,085	1.787,000
Washington	12,916,886	15,676,430
Wheeling	457,681	981,021
Wichita	3,618.444	2,166.275
Wilkes-Barre	763,597	1,093,547
Worcester	4,332,855	6,381,684
Total	$508,097,397	$662,515,574
New York City:		
Manhattan	$31,069,625	$114,688,695
Bronx	8,545,025	16,545,025
Brooklyn	28,504,290	35,398,500
Queens	12,251,669	19,645,630
Richmond	3,334,238	4,493,682
Total	$83,370,847	$190,771,532
Grand total	$591,468,244	$853,426,106

in the United States in 1917 was indicated by the above comparative statistics of building and engineering operations in 1917, based upon contracts awarded, compiled by the F. W. Dodge Co. of New York. In the States north of the Ohio and east of the Missouri rivers, viz.: New England, New York, New Jersey, Pennsylvania, Maryland, Delaware, District of Columbia, Virginia, Ohio, West Virginia, Illinois, Indiana, Iowa, Wisconsin, Michigan, Minnesota, North and South Dakota, and portions of Missouri and Eastern Kansas, the contracts awarded for the year 1917 amounted to $1,618,157,000 as compared with $1,356,989,397 in 1916. In New England the contracts awarded for the year 1917 amounted to $198,874,000 and in 1916 to $209,100,000. While in New England, as indicated, there was a decrease in 1917 over 1916, in other parts of the country there was an increase as shown below. In New York and Northern New Jersey, the contracts awarded for the year 1917 were $333,337,000 as compared with $283,659,500 in 1916. In Eastern Pennsylvania, Southern New Jersey, Maryland, Delaware, District of Columbia, and Virginia, contracts were awarded for the year 1917 amounting to $212,220,000 and for 1916 amounting to $165,180,000. In Western Pennsylvania, West Virginia, and Ohio, contracts awarded for the year 1917 were $229,210,000 and in 1916 $177,047,000. In the central west, Illinois, Indiana, Iowa, Wisconsin, Michigan, and portions of Missouri and eastern Kansas, 1917 contracts were $596,479,000 as compared with $455,696,897 in 1916. In Minnesota and North and South Dakota, comparative figures were 1917, $48,037,000 and 1916, $66,306,000.

France. In France, the Minister of the Interior appointed during the year a committee of fifteen members to be known as the "Commission Consultative des Marches et des Stocks," which was to study the purchase of material for rebuilding France and the award of contracts for provisional warehouses and final reconstruction work in the invaded districts.

Zoning Regulations. The zoning law in the City of New York which was in operation in 1917, prohibited the erection of a very high building over the full area of the lot. Accordingly, during 1917, a number of new law buildings were constructed or put under way and a few buildings of the old type for which plans had been filed were erected. Of the latter class, one of the most notable was the Bush Building occupying the full area of a 50 x 90-ft. lot on the south side of Forty-second Street, near Broadway, New York City. With twenty-eight usable floors, it was the highest in uptown New York, and by the use of special brick work and construction, it was made to appear like a tower building. The steel frame reached to a height of thirty ft. and represented high, narrow framing of a symmetrical character with adequate wind-bracing.

See ARCHITECTURE; CITY PLANNING; CONCRETE; FINANCIAL REVIEW.

BUKOWINA. An Austrian crownland and titular dukedom south of eastern Galicia, bordering Russia and Rumania on the east and Rumania on the south. The area is 4031 square miles, or about half that of Massachusetts. Population, December 31, 1910, 800,098, compared with 730,195 in 1900. The estimated population in 1913 was 818,328. According to the

1910 census, adherents of the Orthodox Church numbered 547,944 (68.49 per cent); Catholics, 125,404 (15.67 per cent); Jews, 102,919 (12.86 per cent); Evangelicals, 20,513 (2.56 per cent). In 1910 the number of Austrian subjects was 794,929; of these, Ruthenian was the vernacular of 305,101 (38.38 per cent); Rumanian, 273,254 (34.38 per cent), which includes almost all Rumanian-speaking Austrians; German, 168,851 (21.24 per cent); Polish, 36,210 (4.55 per cent); Hungarian, 10,391 (1.31 per cent), which includes almost all Austrians of Hungarian vernacular; Bohemian, 1005 (0.13 per cent). The capital of the Bukowina is Czernowitz, which is the seat of one of the eight Austrian universities; its notably mixed population was 87,113 at the 1910 census and 94,000 as estimated June 30, 1914. Other towns are Radautz, with 16,640 inhabitants in 1910; Suczawa, 11,401; Storozynetz, 10,353. The Bukowina has a unicameral diet of sixty-three members; it is represented in the lower house of the Austrian Reichsrat by fourteen members.

BULGARIA. A country of Europe whose separate identity was established July 13, 1878, by the treaty of Berlin. The same treaty also declared eastern Rumelia an autonomous province; but since the successful revolution at Philippopolis of September 18, 1885, it has been incorporated with Bulgaria, under the name Southern Bulgaria, and the accomplished fact was recognized by the arrangement of April 5, 1886. It now forms an integral portion of Bulgaria, with the same ruler, laws, and mode of administration. United Bulgaria is bounded on the north by Rumania, from which it is separated by the Danube; on the west by Serbia and Macedonia; on the east by the Black Sea; and on the south by the Turkish province of Adrianople.

Bulgaria alone of the Balkan States has thrown in her lot with the Central Powers; she replied to the Russian ultimatum of October 3, 1915, by a declaration of war on Serbia October 12, 1915.

Area, etc. Previous to the Balkan wars, the area was given at 96,345.5 sq. kilometres (37,199 sq. miles), and the population at 4,337,513. The area acquired from Turkey in 1913 is stated at 25,257 square kilometres, with an estimated population of 656,535; area ceded to Rumania, 7525 square kilometres, with 282,131 inhabitants. Thus the total area is reckoned at 114,017 square kilometres, with a population of 4,711,917.

The ancient Bulgars were of Finnic stock; the modern Bulgarians are made up of Slavic, Teutonic, and Mongoloid elements, amalgamated with Mussulman and Greek. Their language belongs to the southern Slavic group and the Cyrillic alphabet is used.

The state religion is that of the Orthodox Greek Church, to which over 3,000,000 of the population belong, but its control is independent of the Orthodox communion, and is exercised by the Bulgarian exarch and the national synod of bishops. There are 643,253 Mohammedans among the inhabitants. Education is free and obligatory. Theoretically the state owns the land, but the practice is that the land is held on a perpetual lease by a multitude of small farmers, who pass it on to their heirs and pay one-tenth of the produce as rent. All minerals belong to the state.

No official figures are available for production since Bulgaria joined the Central Powers; but an English authority is responsible for the statement that 1,040,700 metric tons of wheat, 215,650 of rye, 320,900 of barley, and 107,000 of oats were the result of the 1916-17 harvest.

Commerce, etc. The exports consist principally of cereals (especially wheat), live stock, essence of roses, woolens, skins, cheese, eggs, timber, cocoons, and tobacco; the principal imports being textiles, metal goods and machinery, colonial wares, leather, building materials, petroleum and other oils, paper, salt fish, rice, and coal.

In the table below will be found imports and exports in thousands of leva:

	1908	*1910*	*1912*	*1913*	*1914*
Imports ..	130,150	177,357	213,110	189,421	241,490
Exports ..	112,357	129,052	156,407	93,205	154,425

According to Board of Trade returns Bulgarian imports from the United Kingdom were valued at £1,002,423 in 1912, £471,579 in 1913, £857,856 in 1914, £85,505 in 1915; 1916 none. Exports to the United Kingdom: £491,484 in 1912, £40,782 in 1913, £195,143 in 1914, £41,974 in 1915, £800 in 1916.

Austria-Hungary and Germany were the leading countries of origin and destination. Vessels entered in 1914, 11,755, of 3,132,481 tons; cleared 11,710, of 3,108,505 tons.

State railways (1916), 1675 miles; private lines, 149 miles. Bulgaria adopted the Gregorian calendar April 1, 1916. A British authority gives the estimated revenue for 1917 at £17,519,134 and the expenditure at £17,519,134; and calculates the debt at £67,910,278 on May 31, 1916.

Ferdinand I, Czar of the Bulgarians, was born in Vienna, February 26, 1861, youngest son of the late Prince Augustus of Saxe-Coburg and Princess Clementine of Bourbon-Orleans, a daughter of Louis Philippe. He has served as an officer in the Austrian army, and possesses large estates in Hungary. After the deposition of Prince Alexander in September, 1886, Prince Ferdinand was elected Prince of Bulgaria, and on August 14, 1887, took the oath to the Bulgarian constitution at Tirnovo. His election was not formally recognized by the Porte and the Powers until February, 1896. In 1908, Bulgaria declared herself an independent kingdom, and Prince Ferdinand was proclaimed Czar. His sovereignty was recognized by the Powers in April, 1909. He married (April 20, 1893), Princess Marie Louise, daughter of the Duke of Parma; and has two sons, of whom the elder, Prince Boris, born January 30, 1894, was in 1896 admitted to the Orthodox Greek Church. The Princess Marie Louise died January 31, 1899, and the Czar married (February 28, 1908), Princess Eleanora, elder daughter of Prince Henry IV of Reuss-Köstritz.

The executive power in Bulgaria is vested in the king, assisted by a council of ministers, and the legislative power in a single chamber, the Sobranje or national assembly, elected for five years by manhood suffrage in the proportion of one member to every 20,000 of the population. There is also a great Sobranje, consisting of delegates selected in the proportion of one to 10,000 of the population, to which constitutional and other questions, such as a vacancy on the throne or the acquisition of territory, must be referred. See WAR OF THE NATIONS.

BURMA. The largest and easternmost province of British India. Ethnographically Burma is not Indian, but Indo-Chinese. The area is stated at 230,839 square miles. Population in 1911, 12,115,217, as compared with 10,490,624 in 1901. Of the 10,721,453 Buddhists returned for India by the 1911 census, 10,384,579 were in Burma. The capital is Ranzoon, fifth city of India, with 293,316 inhabitants; Mandalay, 138,299.

BURNAND, SIR FRANCIS COWLEY. A British editor and dramatic writer, died at Ramsgate, England, April 21, 1917. He was born in 1836, studied at Eton and at Trinity College, Cambridge, where he founded the Amateur Dramatic Club. He prepared to take orders in the English Church, but after becoming a convert to Roman Catholicism, took up the law and established himself as a barrister at Lincoln's Inn. Even as a student he had begun to write light plays, and soon he gave most of his time to this occupation, providing pieces that were presented in various London theatres. He started to contribute to the periodical *Fun*, but soon shifted over to *Punch*, on which he remained for forty-four years, till 1906. From 1880 till his retirement he served as chief editor, succeeding Tom Taylor. Among more than 120 plays by Burnand the most successful was his *Latest Edition of Black-Eyed Susan*, a burlesque of Douglas Jerrold's play, which ran for 800 nights in London (500 more than the original) and was also played for long in the United States and elsewhere. *The Colonel* was one of his light comedies. With Sir Arthur Sullivan, he wrote the light operas *Contrabandista* and *The Chieftain*, with R. C. Lehmann *His Majesty*, and to A. Cellier's music the popular *La Cigale*. Besides many collections of extracts from *Punch*, Burnand published *A. D. C. Reminiscences*, and, in 1904, *Records and Reminiscences*. He was knighted in 1902.

BURNHAM, HENRY EBEN. An American legislator, died in Manchester, N. H., February 8, 1917. Born in New Hampshire, at Dunbarton in 1844, he graduated from Dartmouth College in 1865 and three years later was admitted to the bar. His first important political office was as member of the New Hampshire House of Representatives in 1873-74. From 1876 to 1879 Mr. Burnham served as judge of probate, in 1889 as chairman of the Republican State convention, and in 1893 as ballot law commissioner. For two terms, 1901-13, he sat in the United States Senate, not again being a candidate in 1912. In 1904 he was a delegate to the Republican National Convention.

BUTTER. See DAIRYING.

BUTTERMILK THERAPY. This widespread dietetic fad appeared in 1917 to be fast losing any scientific support it may have enjoyed in the past. The disciples of Metchnikoff held that it was possible to replace the so-called putrefactive organisms in the intestine by the lactic acid type of bacteria. Pure cultures of various lactic acid bacilli were given by mouth and even introduced directly into the large intestine, but there was little real evidence that the favorable clinical results obtained were due to anything more than the restricted diet, and the attendant hygienic measures. Hull and Rettger made a comprehensive study of the factors involved in the changing of intestinal bacteria types, and found among other things that the direct feeding of bacterial cultures had little, if any, influence on the already existing intestinal flora. It had long been known that arrest of intestinal putrefaction could be obtained by substituting carbohydrates for proteins in the diet, especially when considerable quantities of milk were included. Milk was shown to contain an important constituent, namely, lactose (milk sugar). The lactic acid bacteria flourish best in the presence of lactose. Hull and Rettger concluded accordingly, that a combination of milk and lactose was the most practical and effective diet in intestinal putrefaction and autointoxication.

BYNG. SIR JULIAN HEDWORTH GEORGE. A British soldier, celebrated for his victory over the Germans in the drive for Cambrai on the Western Front, which began on November 20, 1917. He was born September 11, 1862, the seventh son of the second Earl of Strafford. After his military education he joined the Tenth Hussars in 1883, served with them in the Sudan campaign in 1884, in the South African War, 1899-1902, and in 1902-04 commanded the regiment. He was head of the Cavalry School at Netheravon, Salisbury Plain, 1904-05, and there enforced the strictest discipline. He was in command of the Second Cavalry Brigade, 1905-07; of the First Cavalry Brigade, 1907-09; and of the East Anglican Division, 1910-12. On the outbreak of the European war in August, 1914, he was with the British Expeditionary Force sent to Antwerp, and placed at the head of the Third Cavalry Division which distinguished itself in protecting the withdrawal of the Belgian forces and in making the heroic stand before Ypres. In the battles which prevented the Germans from reaching the seacoast Byng's troops greatly distinguished themselves. In 1915 he was in command of the Ninth Army Corps at the Dardanelles, and in May, 1916, he was placed at the head of the Canadian Army Corps on the Western Front. Under his leadership the Canadians distinguished themselves in the battle of the Somme and in the capture of Vimy Ridge. In June, 1917, Byng succeeded Gen. Sir Henry Edmund Allenby (q.v.) in command of the British Third Army. His attack on the Hindenburg line before Cambrai was a complete surprise to the enemy. It was made without artillery preparation and was successful largely because of the efficiency of the tanks. In four days over 100 guns and 9774 prisoners were captured; but these successes were largely neutralized by the German counter attacks which wrested half their gains from the British. Byng was promoted major general in 1909, lieutenant general in 1916, and general in 1917. See WAR OF THE NATIONS.

CADORNA, LUIGI, Count. See WAR OF THE NATIONS.

CAETINI, SENATOR ONORATO, DUKE OF SERMONETA. An Italian statesman, died September 2, 1917, at Rome. He was born in Rome January 18, 1842, and succeeded to the title in 1882. After completing his education he early entered politics, being enthusiastic in the cause of Italian unity and actively participating previous to 1870 in the efforts made in its behalf. He brought to King Victor Emmanuel in Florence news of the result of the plebiscite of the

Roman people affirming their support of the Kingdom of Italy. This completed the unification of the country. Caetani afterward became Italian Minister of Foreign Affairs. He was a former president of the National Geographic Society of Italy.

CAILLAUX, JOSEPH. See FRANCE, *History;* and WAR OF THE NATIONS.

CALCREOSE. A chemical combination of approximately equal parts of creosote and lime. Calcreose is a dark brown powder tasting like phenol and having an empyreumatic odor. It is partly soluble in water. Calcreose was claimed to have the same effect as creosote when administered internally, but not so readily to upset the stomach as creosote when given alone. It was also claimed that relatively large quantities of creosote might be tolerated in this form, possibly because of the slower absorption. The drug was marketed in a solution and in four grain tablets.

CALIFORNIA. POPULATION. The population in the State in 1910 was 2,377,549. The estimated population on July 1, 1917, was 3,039,032.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

	Acreage	*Prod. bu.*	*Value*
Corn 1917	75,000	2,400,000	$4,440,000
1916	64,000	2,048,000	2,540,000
Wheat 1917	375,000	7,425,000	14,850,000
1916	350,000	5,600,000	8,512,000
Oats 1917	196,000	6,860,000	5,831,000
1916	200,000	6,500,000	4,680,000
Rice 1917	80,000	5,600,000	9,800,000
1916	58,000	3,422,000	3,031,000
Potatoes ..1917	105,000	15,225,000	22,888,000
1916	75,000	10,575,000	14,805,000
Hay 1917	2,400,000	*a* 4,560,000	87,552,000
1916	2,500,000	4,375,000	55,125,000
Cotton 1917	117,000	*b* 67,000	9,380,000
1916	52,000	44,000	4,362,000

a Tons. *b* Bales of 500 lbs. gross weight.

MINERAL PRODUCTION. The decrease in 1916 in the number of productive mines in the State continued in 1916, yet the production of gold, silver, copper, lead, and zinc was $7,485,419 more than in 1915. The production of gold in 1916 was 1,035,744 fine ounces, valued at $21,410,741, a decrease of 49,901 fine ounces, valued at $1,031,555. The deep mines of the State yielded 620,897 fine ounces of gold, valued at $12,835,084. The placer mines yielded 414,847 fine ounces, valued at $8,575,657. The silver production in 1916 was 2,564,354 fine ounces valued at $1,687,345, an increase of 885,598 ounces in quantity, and $836,216 in value over 1915. The mined production of copper in 1916 was 55,897,118 pounds valued at $13,750,691, an increase of 15,145,493 pounds in quantity, and $6,519,157 in value over 1915. The lead produced in 1916 amounted to 12,407,493 pounds valued at $856,117, compared with 4,579,245 pounds valued at $215,225 in 1915. The recoverable mine production of zinc in 1915 was 13,094,032 pounds, valued at $1,623,660, compared with 15,256,485 pounds valued at $2,044,369 in 1916, an increase of 2,162,453 pounds in quantity, and $420,709 in value. This production is the largest ever made in the State. In marked contrast to conditions in the last nine years, the petroleum output for 1915 followed a decline, but in 1916 showed an increase to 90,951,936 barrels. As a consequence of the remarkable increase of petroleum in Oklahoma, California again ranked second among the oil-producing States.

TRANSPORTATION. The total railway mileage in the State on June 30, 1916, was 5646. This included main tracks only. There was no construction during 1917.

The railways having the longest mileage were: Denver and Rio Grande, 1579; California and Southern, 808; Union Pacific, 591; Atchison, Topeka and Santa Fé, 506; Chicago, Burlington and Quincy, 394.

The legislature of 1917 passed several amendments to the Public Utilities Acts.

FINANCE. According to the report of the State Treasurer the total receipts for the biennial period, July 1, 1914—June 30, 1916, were $67,732,218. The disbursements were $71,970,231. At the beginning of the period there was a balance on hand of $10,742,915, and at the end, $9,228,465. The bonded debt of the State on June 30, 1916, was $33,009,500.

EDUCATION. The total enrollment in the public schools of the State in 1917 was 564,625; of these 428,381 were in the elementary schools, 112,684 in high schools, and 23,560 in the kindergartens. The average daily attendance in the elementary schools was 348,304; in the high schools 62,865; and in the kindergartens 12,828. There were in all the schools 15,734 female teachers and 3050 male teachers. The total expenditures for school purposes were $33,250,731. The average monthly salary of teachers in the elementary schools was $81.74; in the kindergartens $78.10, and in the high schools the average yearly salary was $1473.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include State Prisons at San Quentin and Folsom, the Preston School of Industry, the Whittier State School, California School for Girls, State Hospitals at Stockton, Napa, Agnew, and Mendocino, the Southern California State Hospital, the New State Hospital, the Sonoma State Home, the Folsom State Hospital, and the Industrial School for Adult Blind. The total expenditure for these institutions is about $2,500,000 annually.

POLITICS AND GOVERNMENT. There were no elections in the State in 1917, and there were few happenings of political interest. On March 16, William D. Stephens, lieutenant governor, became Governor of the State to succeed Hiram Johnson, who entered the United States Senate on March 4. On December 17, the home of Governor Stephens was partially destroyed by a bomb without, however, resulting in the injury of any of the inmates. There were strikes especially in the shipbuilding industry during the year, and these will be found discussed in the article STRIKES. See PROSTITUTION.

LEGISLATION. Among the more important measures passed by the legislature of 1917 are those noted here. Several measures relating to the judiciary and the administration of justice in the State were enacted. One of these proposed a constitutional amendment to make practically the whole of the judiciary article of the constitution, which now provides in detail for the organization of the courts throughout the State, the general law subject to amendment or repeal by the legislature. The adoption of this amendment would give to the legislature unlimited power to provide in its discretion for the efficient administration of the judicial business of the State. A measure was passed forbidding the acceptance of the diploma of any law school for admission to the bar, but required applicants to be examined. Provision was made for a State council of defence to coöperate with the National Council. The sale of certain articles manufactured in the prisons of other States, unless labeled, and unless the place where such goods are offered for sale post a conspicuous notice that such goods are for sale, was prohibited. For purposes of voting, the husband's residence was made that of his wife's. Provision was made for absent vote by those enrolled in the national service. Women employed in the care and preparation of foods were partially exempted from the eight-hour law.

A constitutional amendment was passed by the legislature providing for a compensation law subject to the approval of the people. A "Blue Sky" law was enacted. Amendments were made to the laws relating to insurance, also to the laws affecting the law for the organization of corporations. Provision was made for the regulation of stages or automobiles operating as common carriers over fixed routes. Provision was made for the commitment and care of the feeble-minded or criminally inclined persons, and segregation of the feeble and insane by removal from other institutions was put into effect. A constitutional amendment providing for social insurance, subject to the approval of the people, was passed.

STATE OFFICERS. Governor, William D. Stephens; secretary of state, Frank C. Jordan; treasurer, Friend William Richardson; comptroller, John S. Chambers; attorney-general, U. S. Webb; superintendent of public instruction, Edward Hyatt; commissioner of insurance, Alexander McCabe—all Progressives except F. C. Jordan and Edward Hyatt, Republicans.

JUDICIARY. Supreme Court: Chief Justice, Frank M. Angellotti; associate justices, William P. Lawlor, Lucien Shaw, H. A. Melvin, F. W. Henshaw, M. C. Sloss, and William G. Lorigan; clerk, B. Grant Taylor.

CALIFORNIA, UNIVERSITY OF. A co-educational State institution of higher learning at Berkeley, Cal., with several professional schools in San Francisco. In the fall of 1917 there were 11,960 students and 503 members of the faculty. Volumes in the library numbered 340,000. The University of California was founded in 1860. President, Benjamin Ide Wheeler, LL.D.

CALORIMETRY. Our knowledge of the mechanism of heat regulation in the human body and its relation to water elimination, has been materially increased by the use of the calorimeter. At Bellevue Hospital, New York, 300 experiments carried out under conditions representing a climatic environment of 71.6° and 75.2° F. and a relative humidity of from 25 to 50 per cent were made in the Sage respiration calorimeter. Thirteen normal men, lightly clad, were found to give off on the average approximately one fluid ounce of water an hour, representing the vaporization of water from the skin and lungs. This represented a 24 per cent loss of heat calories. It was estimated that one quarter of the heat produced in the body is lost through the skin and respiratory passages.

CAMBODIA. A kingdom of Farther India, constituting a French protectorate and forming part of French Indo-China. The capital is Pnom-Penh; its population, which is variously stated, is probably over 60,000. Much of the country is covered with forest. The natives cultivate rice, cotton, betel, tobacco, cardamoms, etc., and raise cattle and buffaloes. Most of the foreign trade passes through Saïgon (Cochin-China). Native king, Sisowath. See FRENCH INDO-CHINA.

CAMBROONS or CAMEROON. See KAMERUN.

CAMOUFLAGE. A war term derived from the French slang verb long in use, *se camoufler*, to disguise one's self. See WAR OF THE NATIONS, *Aërial Warfare.*

CAMP CONSTRUCTION. See CITY PLANNING.

CAMPFIRE GIRLS OF AMERICA. An organization founded by Charlotte V. Gulick in 1913 and devoted to the cause of good health, especially by life and work in the open air, and to economy and social improvement. The Campfire has definite and important meanings in connection with this organization. Camping out together is regarded as basic, not primarily because of the enjoyment of it, but because of the formation and deepening of friendships, and the opportunities it gives to girls and their guardians to come into close relation and into contact with nature, thereby escaping the distractions of the city and gaining the leisure for a time to deal more directly with the larger and quieter things of life. In 1916, 32,884 girls camped out for a week or more, and 45,502 girls camped out in 1917. The membership has grown very rapidly, starting with a total of 35,980 in 1913 and increasing to 99,937 in 1917. Twenty-five Guardians Associations were organized in eighteen States in 1917, besides a number of training camps and summer school courses. These courses were all related to the training of women to become guardians of campfires.

The original programme of the organization's work was varied and enlarged by the outbreak of the war. Its previous lines of activity were put into the background. A programme, called the "Minute Girl Programme," received the approval of President Wilson. Its leading requirements were: Coöperating with the Red Cross in its classes and in its work; organizing in groups of from six to twenty to study the saving of food and of labor in the homes; and the operation of gardens in accordance with instructions from the Department of Agriculture. It was made a rule to walk 100 miles a month so as to become "hard" as a soldier and to save money. Campfires are organized during the war to work in this programme, without undertaking the ritual, ceremony, or ranks of the Campfire Girls, although they are free to do so at any time. As a result, the average number of charter members taken in each month during the nine months preceding the declaration of war was 2650, and after the declaration of war between the United States and Germany the average taken during the first three months was 3347. All over the United States, Campfire Girls were taking care of small children while their mothers were doing Red Cross work, working in the gardens, or were farming. The organization publishes monthly *Wohelo*, a magazine for girls. The president in 1917 was Dr. Luther H. Gulick; the secretary, Lester F. Scott.

CANADA, Dominion of. A British self-governing dependency, extending from the United States to the Arctic Ocean and from the Atlantic to the Pacific. The capital is Ottawa, in the province of Ontario.

Area and Population. Canada consists of nine provinces and two territorial divisions, having a gross area computed at 3,729,665 square miles, of which 3,603,910 square miles are land and 125,755 square miles water. This water area is exclusive of Hudson Bay, Ungava Bay, the Gulf of St. Lawrence, and all other tidal waters, excepting that portion of the River St. Lawrence which is between Pointe-des-Monts in Saguenay and the foot of Lake St. Peter. The gross area is larger than that of the United States, with Alaska. The gross area of the United States and all its possessions, which is computed at 3,743,444 square miles, is not greatly in excess of the gross area of Canada. But it should be borne in mind that much of the Canadian area lies so far north that it is unfit for occupation and development.

The census of June 1, 1911, returned a population of 7,206,643; an estimate of 1916, 8,361,000.

The following table shows the provinces, their capitals, the gross area, and the population by provinces according to the census of June 1, 1911:

Provinces	*Capitals*	*Sq. miles*	*Pop. '11*
Alberta	Edmonton	255,385	374,663
British Columbia.	Victoria	355,855	392,480
Manitoba	Winnipeg	251,832	461,630
New Brunswick...	Fredericton	27,985	351,889
Nova Scotia......	Halifax	21,428	492,338
Ontario	Toronto	407,262	2,527,292
Prince Edward Is.	Charlottetown	2,184	93,728
Quebec	Quebec	706,834	2,005,779
Saskatchewan	Regina	251,700	492,432
Yukon Territory..	Dawson	207,076	8,512
Northwest Ter....	Ottawa	1,242,224	5,900
Canada	Ottawa	3,729,665	7,206,643

In 1911, males numbered 3,821,995, and females 3,384,648, the number of females to each 1000 males being 886, as compared with 952 in 1901. The proportionate increase of males was due principally to immigration. In Canada (exclusive of Yukon Territory and the Northwest Territories) the male population 18 to 45 years of age was 1,720,070 in 1911; of these, 1,109,383 were Canadian born, 306,377 British born, and 304,310 foreign born. The total number of persons born in Canada was 5,619,682 (77.98 per cent); persons born in other parts of the British Empire, 833,422 (11.58 per cent); foreign born, 752,732 (10.44 per cent). The more important returns for birthplace in 1901 and 1911, with percentages for 1911, are shown below:

	1901	*1911*	*P. ct.*
Canada	4,671,815	5,619,682	77.98
British Isles..........	890,019	784,526	10.89
Other British.........	30,693	48,896	0.68
United States.........	127,899	303,680	4.21
Austria-Hungary	28,407	121,430	1.68
Russia	31,231	100,971	1.40
Norway and Sweden..	10,256	49,194	0.68
Germany	27,300	39,577	0.55
Italy	6,854	34,739	0.48
China	17,043	27,083	0.38

Population of the larger cities in 1911: Montreal (P. Q.), 470,480; Toronto (Ont.), 376,538; Winnipeg (Man.), 136,035; Vancouver (B. C.), 100,401; Ottawa (Ont.), 87,062; Hamilton (Ont.), 81,969; Quebec (P. Q.), 78,710; Halifax (N. S.), 46,619; London (Ont.), 46,300; Calgary (Alta.), 43,704; St. John (N. B.), 42,511; Victoria (B. C.), 31,660; Regina (Sask.), 30,213; Edmonton (Alta.), 24,900.

A census of the Prairie Provinces was taken June 1, 1916. The totals, as compared with the figures for 1906, are shown below:

	Pop.	*Population, 1916*		
	1906	*Males*	*Females*	*Total*
Manitoba	365,688	294,609	259,251	553,860
Saskatchewan .	257,763	363,787	284,048	647,835
Alberta	185,412	277,256	219,269	496,525
Total......	808,863	935,652	762,568	1,698,220

The following table shows the city population of the Prairie Provinces:

Manitoba:	*1901*	*1906*	*1911*	*1916*
Winnipeg	42,340	90,153	136,035	163,000
Brandon	5,620	10,408	13,839	15,212
St. Boniface......	2,019	5,119	7,483	11,021
Portage la Prairie.	3,901	5,106	5,892	5,879
Saskatchewan:				
Regina	2,249	6,169	30,213	26,127
Saskatoon	113	3,011	12,004	21,048
Moosejaw	1,553	6,249	13,823	16,934
Prince Albert......	1,735	3,005	6,254	6,436
North Battleford..	....	824	2,105	3,145
Swift Current.....	121	554	1,852	3,181
Weyburn	113	966	2,210	3,050
Alberta:				
Calgary	4,392	13,578	43,704	56,514
Edmonton	4,176	14,088	30,479	53,846
Lethbridge	2,072	2,313	8,050	9,486
Medicine Hat......	1,570	3,020	5,608	9,272
Red Deer.........	323	1,418	2,118	2,203
Wetaskiwin	550	1,652	2,411	2,048

The table below shows the marriage rates and births and deaths. The figures are not strictly comparable, owing to the diversity of practice which prevails in the various provinces. Thus, in Nova Scotia, Quebec, and Ontario stillbirths are eliminated from the calculations, but in the Prairie Provinces, British Columbia, and Prince Edward Island they are included. New Brunswick does not report vital statistics.

		Marr.	*Births*		*Deaths*	
		Rate	*No.*	*Rate*	*No.*	*Rate*
Alta.	1914	8.19	13,685	24.25	4,147	7.35
	1915	8.55	13,452	27.36	3,588	7.30
B. C......	1914	8.80	8,754	17.93	3,974	8.14
	1915	6.48	8,558	16.22	3,832	7.26
Man.	1913	13.24	16,422	36.34	5,919	13.10
	1914	10.88	17,449	33.50	5,617	10.78
N. S......	1914	7.26	12,771	25.46	7,527	15.01
	1915	6.70	13,171	26.08	7,675	15.20
Ont.	1914	9.22	66,225	24.21	32,440	12.35
	1915	8.82	67,032	25.15	33,294	12.49
P.E.I.	1914	5.80	1,511	16.12	1,012	10.80
	1915	5.65	1,743	18.59	1,085	11.57
P. Q......	1913	8.13	79,089	37.70	36,200	17.33
	1914	7.62	80,361	38.00	36,002	17.02
Sask.	1913	7.92	13,200	20.94	4,150	6.58
	1914	6.94	16,489	22.83	3,950	5.47

Immigration into Canada reached its highest point in the year ended March 31, 1913. Immigrant arrivals are reported as follows:

	U. Kingdom	U. States	Other	Total
1913	150,542	139,009	112,881	402,432
1914	142,622	107,530	134,726	384,878
1915	43,276	59,779	.41,734	144,789
1916	8,664	36,937	2,936	48,537
1917	8,282	61,389	5,703	75,374

Immigrants whose destination was the Maritime Provinces numbered, in the fiscal years 1916 and 1917 respectively, 5981 and 5710; Quebec, 8274 and 10,930; Ontario, 14,743 and 26,078; Manitoba, 3487 and 5247; Saskatchewan, 6001 and 9874; Alberta, 7215 and 12,418; British Columbia, 2839 and 5117 (including 315 Yukon). In the period 1901-17, total immigrant arrivals numbered 3,174,722.

Religion and Education. The numbers of adherents of the larger religious denominations were as follows in 1911: Roman Catholics, 2,833,041 (increase per cent over 1901, 27.06); Presbyterians, 1,115,324 (32.39); Methodists, 1,079,892 (17.78); Anglicans, 1,053,017 (53.05); Baptists, 382,666 (20.83); Lutherans, 229,864 (148.43). Further details may be found in the 1915 Year Book.

Persons six years of age and over at the 1911 census numbered 6,154,511; of these, 521,842, or 8.48 per cent, were unable to read. Persons between the ages of five and twenty numbered 2,306,558; of these, 1,147,838, or 49.76 per cent, attended school for some period in 1910. The following table shows for 1916 the number of schools, of teachers, and of pupils enrolled, the percentage of average attendance, and the expenditure for public education (year ended December 31 for Alberta, Ontario, Prince Edward Island, and Saskatchewan; July 31 for Nova Scotia; and June 30 for British Columbia, Manitoba, New Brunswick, and Quebec):

	Schools	Teachers	Enroll.	Av. At.	Expend.
Alta. ...	2,170	4,607	99,201	60.75	$6,121,614
B. C....	770	1,902	59,800	78.69	3,216,350
Man. ...	2,888	2,991	103,796	64.10	6,658,230
N. B....	1,996	2,161	66,548	65.98	1,146,883
N. S.....	2,837	3,019	109,189	63.40	1,575,562
Ont.	...	12,080	508,522	64.56	†13,351,905
P.E.I. ...	476	595	18,362	61.79	244,572
P. Q.*...	5,998	7,982	251,492	77.73	†6,622,837
Sask.* ..	3,367	4,949	119,279	58.70	6,658,230

* Figures are for 1915. † For elementary schools.

In the foregoing table, secondary schools are not included in the figures for Ontario, Quebec, and British Columbia. Ontario had, in 1916, 161 collegiate institutes and high schools, with 1038 teachers, 38,810 students, and an average attendance of 61.22 per cent. Quebec had, in 1915, 721 model (intermediate) schools, with 3356 teachers, 109,832 pupils, and an average attendance of 83.68 per cent; 321 academies, with 3454 teachers, 86,763 students, and an average attendance of 84.47 per cent; 21 Roman Catholic classical colleges, with 754 professors and 8251 students. British Columbia had, in 1916, 40 high schools, with 162 teachers, 4770 pupils, and an average attendance of 80 per cent.

Agriculture. Final official figures for the 1917 crops were not available at the end of the year. In the following table, taken from data published by the International Institute of Agriculture, provisional figures for crop areas and production are shown for 1917 as compared with the average area and production in the five-year period 1911-15; areas are in hectares, production in metric quintals:

	Hectares		Quintals	
	1917	1911-15	1917	1911-15
Wheat ...	5,972,267	4,700,895	67,812,746	69,391,383
Rye	85,387	48,733	1,065,572	590,873
Barley ...	967,995	640,984	12,914,715	10,408,410
Oats	4,877,203	4,169,624	61,663,787	61,633,683
Corn	70,414	113,918	......	4,125,087
Flaxseed .	502,613	513,472	2,557,373	3,634,766
Potatoes .	203,149	193,535	......	20,844,354

Previous estimates of the areas and yields of the field crops of Canada for 1915 and 1916 have been corrected to agree with the finally ascertained results of the census of the Prairie Provinces, taken in June, 1916. These results indicate that the estimates of areas sown to the principal grain crops for the harvest of 1915, as compiled from the reports of correspondents, were considerably below the census returns as compiled from the individual schedules filled up for every farm. Thus, the census returns showed, for the Prairie Provinces in 1915, 13,867,715 acres of wheat instead of 11,744,700 acres. For 1916 the total area under field crops is placed at 38,930,333 acres, as compared with 39,140,460 in 1915, and 33,436,675 in 1914.

The following table shows for principal crops the area in thousands of acres and the production in bushels or tons in 1915 and 1916:

	1,000 acres		Bushels	
	1915	1916	1915	1916
Wheat	15,109	15,370	393,542,600	262,781,000
Oats	11,556	10,996	464,954,400	410,211,000
Barley	1,718	1,803	54,017,100	42,770,000
Rye	122	148	2,486,200	2,876,400
Peas	196	152	3,464,250	2,218,100
Beans	43	33	723,400	412,600
Buckwheat ..	344	342	7,865,900	5,976,000
Mixed grains.	467	413	17,517,600	10,584,800
Flaxseed	463	658	6,114,000	8,259,800
Corn for husking ...	253	173	14,368,000	6,282,000
Potatoes	486	473	60,353,000	63,297,000
Turnips, mangolds, etc..	157	142	60,175,000	36,921,100
			Tons	
Hay and clover	7,777	7,821	10,612,000	14,527,000
Fodder corn.	332	293	3,382,770	1,907,800
Sugar beets..	18	15	141,000	71,000
Alfalfa	98	99	260,970	286,750

The total value of the field crops of Canada in 1916 is computed at $886,494,900 (as compared with $825,370,600 in 1915), including: grain crops, $639,733,700 ($601,093,300 in 1915); potatoes and sugar beets, $51,422,300 ($37,235,300 in 1915); fodder crops, $195,338,900 ($187,042,000 in 1915). The total for 1916 was higher than for any previous year. Average prices received by farmers in 1915 and 1916 respectively: wheat, 91 cents and $1.31; oats, 36 and 51 cents; barley, 52 and 82 cents; rye, 77 cents and $1.11; flaxseed, $1.51 and $2.04; peas, $1.65 and $2.22; beans, $3.05 and $5.40; buckwheat, 75 cents and $1.07; mixed grains, 57 and 88 cents; corn for husking, 71 cents and $1.07; potatoes, 60 and 81 cents; turnips, etc., 24 and 39 cents. Average prices per ton in 1915 and 1916: hay and clover, $14.37 and $11.60; fodder corn, $4.91 and $4.92; sugar beets, $5.50 and $6.20; alfalfa, $12.68 and $10.69.

The following table shows the area, in thousands of acres, and the yield, in thousands of bushels, of wheat, barley, oats, and flaxseed in the Prairie Provinces in 1915 and 1916:

	Wheat		*Barley*	
	1,000 ac.	*1,000 bu.*	*1,000 ac.*	*1,000 bu.*
Manitoba:				
1915	2,800	69,337	567	16,658
1916	2,726	29,667	688	13,729
Saskatchewan:				
1915	8,929	224,312	300	9,523
1916	9,032	147,559	367	9,916
Alberta:				
1915	2,138	66,538	304	9,822
1916	2,605	65,088	337	9,774
Prairie Provinces:				
1915	13,868	360,187	1,171	36,003
1916	14,363	242,314	1,391	33.419

	Oats		*Flaxseed*	
	1,000 ac.	*1,000 bu.*	*1,000 ac.*	*1,000 bu.*
Manitoba:				
1915	1,317	50,750	15	120
1916	1,444	48,439	16	210
Saskatchewan:				
1915	3,336	145,066	395	5,255
1916	3,792	163,278	542	6,692
Alberta:				
1915	1,827	83,876	48	670
1916	2,124	102,199	95	1,311
Prairie Provinces:				
1915	6,481	279,692	458	6,045
1916	7,359	313,916	653	8,213

On June 11, 1917, a Board of Grain Supervisors of Canada, with offices at Winnipeg, was appointed by Order in Council under the War Measures Act, 1914, with wide powers of control over the disposition of grain, including the power to fix maximum prices at which grain may be sold. In pursuance of these powers, the board fixed the following prices per bushel of sixty lb. for different grades of wheat, to remain in force until August 31, 1918: from September 12, 1917, No. 1 Hard and No. 1 Manitoba Northern, $2.21; No. 2 Manitoba Northern, $2.18; No. 3, $2.15; Alberta Red Winter No. 1, $2.21; No. 2, $2.18; No. 3 $2.15. Prices for other grades of wheat have also been fixed by the board. By Order in Council of April 16, 1917, wheat, wheat flour, and semolina, were placed on the customs free list from April 17, 1917, instead of being subject to the import duties previously payable. Under the provisions of the American tariff, the removal of the Canadian import duties on wheat secured the free entry of Canadian wheat into the United States.

By provinces, the total areas and values of crops are reported as follows for 1915 and 1916:

FOREST PRODUCTS. The estimated value of Canadian forest products was $172,880,000 in 1915 and $172,830,000 in 1916. In 1916, lumber produced amounted to 3,490,550 thousand board feet, valued at $58,365,349; shingles, 2,897,562 thousand, $5,962,933; lath, 665,588 thousand, $1,743,940; firewood, $62,000,000; pulpwood, $19,975,000; fence posts and rails, $8,000,000; cross-ties, $3,750,000; cooperage, $1,250,000.

FISHERIES. The total market value of Canadian fisheries as reported for the fiscal year 1916-17 surpassed the returns of any previous year, being $39,208,378, as compared with $35,860,708 in 1915-16. The increase was due to the greater demand for fish and the higher prices prevailing. The sea fisheries contributed a value of $34,386,013, and the inland fisheries $4,822,365. Value of the catch by provinces in 1915-16 and 1916-17 respectively; British Columbia, $14,538,320 and $14,637,346; Nova Scotia, $9,166,851 and $10,092,902; New Brunswick, $4,737,145 and $5,656,859; Quebec, $2,076,851 and $2,991,624; Ontario, $3,341,182 and $2,658,993; Prince Edward Island, $933,682 and $1,390,212; Manitoba, $742,925 and $1,344,179; Saskatchewan, $165,888 and $231,946; Alberta, $94,134 and $144,317; Yukon, $63,730 and $60,210.

The most valuable catch is salmon, which amounted to $11,262,381 in 1915-16 and $10,882,431 in 1916-17; lobsters, $4,506,155 and $5,508,054; cod, $4,489,496 and $5,449,964; herrings, $2,906,887 and $3,050,421; halibut, $2,261,776 and $2,263,573. British Columbia is predominant in the salmon fishery, and Nova Scotia in the cod.

MINING. The total value of Canada's production in 1916 was $177,357,454; the highest previous record was $145,634,812, in 1913. The cutting off of markets and the closing of metal exchanges in 1914, after the outbreak of the great war, resulted in closing down or restriction of operation at many properties. Recovery or readjustment came in 1915. In consequence of war demands, there was renewed activity in the production of copper, nickel, lead, zinc, steel, and certain non-metallic minerals; and the large total for 1916 is in some degree due to enhanced prices. In proportion of value, the provinces shared in the mineral output of 1915 as follows: Ontario, 44.6 per cent; British Columbia, 20.9; Nova Scotia, 13.1; Quebec, 8.8; Alberta, 7.2; Yukon, 3.6; Manitoba, 1.0; New Brunswick, 0.7; Saskatchewan, 0.3.

	Acres		*Values*	
	1915	*1916*	*1915*	*1916*
Alta.	4,570,918	5,409,544	$93,514,200	$148,738,600
B. C.	292,880	289,650	11,625,700	15,528,000
Man.	4,843,816	5,030,960	92,318,800	76,749,000
N. B.	893,800	889,220	20,092,600	22,924,200
N. S.	727,260	746,580	19,556,700	22,369,800
Ont.	9,391,500	7,637,500	207,048,500	190,646,000
P.E.I.	481,930	485,910	10,930,400	14,124,100
P. Q.	4,901,760	4,590,200	104,683,000	102,937,300
Sask.	13,036,596	13,850,769	265,605,700	292,773,900
Can.	39,140,460	38,930,333	$825,370,600	$886,494,900

Number of live stock on farms as reported for June, 1916, and June, 1917, respectively: horses, 3,258,342 and 3,412,749; milch cows, 2,833,433 and 3,202,283; other meat cattle, 3,760,718 and 4,718,657; sheep, 2,022,941 and 2,369,358; swine, 3,474,840 and 3,619,382.

The table at the top of the following page shows the total value of the mineral output and of principal minerals, in thousands of dollars.

The reported copper output in 1915 and 1916 respectively amounted to 100,785,150 and 119,770,814 lb.; nickel, 68,308,657 and 82,958,-

	1910	*1913*	*1914*	*1915*	*1916*
Copper	7,094	11,754	10,302	17,411	32,580
Nickel	11,181	14,908	13,655	20,493	29,035
Gold	10,206	16,599	15,983	18,978	19,162
Silver	17,580	19,041	15,594	13,229	16,855
Lead	1,216	1,755	1,628	2,594	3,541
Pig iron *	1,651	996	1,139	1,716	1,329
Total, including other metals	49,439	66,361	59,387	75,815	107,040
Coal	30,910	37,335	33,472	32,111	38,797
Cement	6,412	11,020	9,188	6,977	6,530
Asbestos	2,556	3,831	2,910	3,575	5,160
Clay products	7,630	9,504	6,872	3,914	4,197
Bldg. stone	3,650	5,505	5,469	4,245	3,869
Gypsum	934	1,448	1,156	855	731
Petroleum	339	406	343	301	392
Total, including other non-metals	57,385	79,273	69,476	61,294	70,317
Grand total	106,824	145,635	128,864	137,109	177,357

* From Canadian ore only.

564 lb.; gold, 918,056 and 926,963 oz.; lead, 46,316,450 and 41,593,680 lb.; pig iron from Canadian ores, 158,595 and 115,691 short tons; coal, 13,267,023 and 14,428,278 short tons; cement, 5,681,032 and 5,359,050 bbl.

MANUFACTURES. In 1917 the Canadian Census and Statistics Office published the report on the postal census of manufactures which was taken in 1916 for the calendar year 1915. The following table compares the returns for 1915 with those for 1905:

			Increase	
	1905	*1915*	*$*	*Per cent*
Establishments	15,796	21,306	5,510	34.88
Capital	$846,585,023	$1,994,103,272	1,147,518,249	135.54
Employees on salaries	36,496	52,683	16,187	44.35
Salaries	$30,724,086	$60,308,293	29,584,207	96.29
Employees on wages	356,034	462,200	106,166	29.82
Wages	$134,375,925	$229,456,210	95,080,285	70.76
Value of products	$718,352,603	$1,407,137,140	688,784,537	95.88

Establishments engaged in the manufacture of food products had an output in 1915 valued at $388,815,362; textile products, $144,686,605; timber and lumber, and remanufactures, $123,396,686; iron and steel products, $120,422,420; paper and printing, $74,038,398; leather and its finished products, $71,036,644; metals and metal products other than iron and steel, $90,943,278; paper and printing, $74,038,398; vehicles for land transportation, $73,878,212; leather and its finished products, $71,036,644; chemicals and allied products, $45,410,486; liquors and beverages, $34,859,927; tobacco and its manufactures, $28,987,250; clay, glass, and stone products, $27,244,813; vessels for water transportation, $8,419,648; miscellaneous industries, $134,268,231; hand trades, $40,729,180; total, $1,407,137,140.

The number of establishments employing five hands and over in 1915 was 15.593 (a decrease of 18.86 per cent from 1910). Their capital amounted to $1,958,705,230 (there being an increase of 57.00 per cent over 1910); salaries and wages, $283,311,505 (17.55 per cent increase); cost of materials, $791,943,433 (31.66 per cent increase); value of products, $1,381,547,225 (18.49 per cent increase). This value of products was thus distributed among the provinces: Ontario, $715,531,839; Quebec, $381,203,999; British Columbia, $72,321,972; Nova Scotia, $69,345,819; Manitoba, $60,481,446; New Brunswick, $37,303,900; Alberta, $29,416,221; Saskatchewan, $13,355,206; Prince Edward Island, $2,586,823; total, $1,381,547,225.

COMMERCE. In both import and export values, the Canadian foreign trade in the calendar year 1917 surpassed by enormous figures the returns of any previous year. The increased values were in consequence not only of enhanced prices but of a larger volume of trade. The export expansion was in both raw materials and manufactures. The increase of imports was largely materials necessary in the production of manufactures. For the eleven months ended November 30, 1917, imports of merchandise for consumption were valued at $943,500,000, and exports of Canadian produce at $1,399,018,000, the excess of exports being $455,519,000, as compared with $262,957,000 in eleven months of 1916 and $115,980,000 in the same period of 1915, while in the eleven months of 1914, 1913, and 1912 imports exceeded exports by $108,824,000, $233,647,000, and $281,123,000 respectively.

The following table shows, for fiscal years ended March 31, the values in dollars of imports of dutiable merchandise, free merchandise, and coin and bullion, together with the values of the total imports:

	Merchandise		*Coin &*	*Total*
	Dutiable	*Free*	*Bullion*	*Imports*
1911	291,818,801	170,222,529	10,206,210	472,247,540
1912	343,870,082	189,916,581	26,033,881	559,320,544
1913	456,086,187	230,518,226	5,427,979	692,032,392
1914	425,324,576	210,186,916	15,235,305	650,746,797
1915	318,951,094	178,500,808	131,992,992	629,444,894
1916	310,193,014	220,052,580	34,260,202	564,505,796
1917	480,165,357	384,339,089	28,081,120	892,585,566

The value in dollars of exports in fiscal year are shown in table on following page.

Imports of merchandise for consumption, as compared with exports of Canadian produce (these being the special trade), together with the totals of all imports and exports and the

	Merchandise		*Coin &*	*Total*
	Canadian	*Foreign*	*Bullion*	*Exports*
1911	274,316,553	15,683,657	7,196,155	297,196.365
1912	290.223,857	17,492,294	7,601,099	315,317,250
1913	355,754,600	21,818,755	16,163.702	393,232.057
1914	431,588,439	23,848,785	23,560,704	478,997,928
1915	409,418,836	52,023,673	29,366,368	490,808,877
1916	741,610,638	37,689,432	103,572,432	882,872,502
1917	1,151,375,768	27,885,832	196,547,048	1,375,758,148

total customs duties collected, are shown below in dollars, for fiscal years:

	Special Trade		*Total*	*Customs*
	Imports	*Exports*	*Trade*	*Duties*
1911	451,745,108	274,816,553	769,448,905	73,312,368
1912	521,448,309	290,223,857	874,637,794	87,576,037
1913	670,089,066	355,754,600	1,085,264,449	115,063,688
1914	618,457,144	431,588,439	1,129,744,725	107,180,578
1915	455,446,312	409,418,836	1,120,253,771	79,205,910
1916	507,817,159	741,610,638	1,447,378,298	103,940,101
1917	845,330,903	1,151,875,768	2,268,343,714	147,623,230

The principal imports for consumption, in the fiscal years 1916 and 1917 respectively, included the following, valued in thousands of dollars: metals and minerals and manufactures thereof, 103,449 and 165,187, of which iron and steel and manufactures thereof 76,360 and 125,614; tin and manufactures, 5326 and 10,317; brass and manufactures, 3744 and 5886; copper and manufactures, 4443 and 8600; cotton and manufactures, 32,470 and 51,139; coal, coke, etc., 32,521 and 44,860; wool and manufactures, 30,371 and 42,467; sugar, molasses, etc., 22,735 and 34,380; provisions, 11,963 and 28,709; drugs, medicines, dyes, and chemicals, 17,095 and 27,590; oils, 13,943 and 21,620; fruits, 14,330 and 18,773; carriages, automobiles, bicycles, etc., 10.869 and 18,247; breadstuffs, 11,084 and 17,072; silk and manufactures, 8708 and 13,757; hides and skins other than fur, 12,442 and 12,864; wood and manufactures, 8622 and 11,490; rubber and gutta-percha and manufactures, 9544 and 11,256; leather and manufactures, 6514 and 11,212; flax, hemp, jute and manufactures, 7880 and 10,158; tea, 8272 and 7955; paper and manufactures, 4724 and 6848; electrical apparatus, 4896 and 6342; tobacco, 5753 and 6093; books, maps, pamphlets, periodicals, etc., 5125 and 5815; settler's effects, 3969 and 5085; hats, caps, bonnets, etc., 3341 and 4499; glass and manufactures, 2452 and 4099; spirits and wines, 3908 and 3884.

The following table shows for fiscal years the exports of Canadian products by great classes, in thousands of dollars:

	1913	*1914*	*1915*	*1916*	*1917*
Mfrd.	43,693	57,443	85,540	242,035	477,400
Agricult'r'l	150,146	198,220	134,746	249,661	373,414
Animal ..	44,785	58,349	74,391	102,882	127,795
Mining ...	57,443	59,039	51,741	66,590	85,617
Forest ...	43,255	42,792	42,651	51,271	55,907
Fishery ..	16,337	20,624	19,687	22,378	24,889
Misc......	97	121	664	6,793	6,354
Total...	355,755	431,588	409,419	741,611	1,151,376

One of the most extraordinary developments in the history of international trade was the expansion of Canadian export manufactures as indicated in the foregoing table. During the fiscal year 1917, the export of manufactured goods of home production, aggregating $477,399,676, exceeded that of 1916 by 97 per cent and that of 1914 by 735 per cent; it exceeded the export of all kinds of Canadian merchandise in 1914 by over $45,800,000. And it may be noted that this latter figure is greater than the value of all Canadian export manufactures in as recent a year as 1913. The principal contributing factor to this enormous increase was the shipments of munitions and explosives, amounting in the fiscal year 1917 to $281,220,270, or nearly 59 per cent of the total export of domestic manufactures. But even if munitions and explosives be eliminated, there was an increase over the total of 1914 of $138,735,954, or 242 per cent; thus ordinary lines of manufactured goods played an important part in the export development. Moreover, it should be pointed out that such important articles as flour, canned goods, bacon, cheese, rough lumber, etc., are placed under other classifications, although in the census returns they are designated factory products. Leading exports of domestic manufactures were as follows in the fiscal years 1916 and 1917 respectively, in thousands of dollars: munitions, 73,904 and 240,302; iron and steel manufactures, 50,062 and 44,754 (including wire and wire nails, 4483 and 9038); explosives, 7080 and 40,917; paper, 20,039 and 26,123; wood manufactures, 11,498 and 21,313 (including wood pulp, 10,377 and 20,404); gasoline launches, 147 and 15,150; carriages, automobiles, etc., 11,372 and 14,397; drugs, dyes, chemicals, etc., 6446 and 9214; leather and manufactures, 14,575 and 7409; clothing and apparel, 9148 and 6356; household effects, 4222 and 4315; agricultural implements, 3354 and 3576; liquors, 1432 and 2571.

The table below shows, for fiscal years, the exports of Canadian wheat and oats, total grain, and wheat flour, quantities in thousands and values in thousands of dollars:

	1913	*1914*	*1915*	*1916*	*1917*
Wheat, bu....	93,166	120,427	71,913	157,745	189,644
Wheat, $.....	88,609	117,719	74,294	172,896	244,395
Oats, bu.....	10,479	34,997	17,768	26,816	66,369
Oats, $......	5,068	13,380	8,961	14,638	33,918
All grain, bu.	110,571	169,929	96,573	191,857	269,098
All grain, $..	97,941	138,129	88,018	192,827	289,850
Wht. flr., bbl..	4,478	4,832	4,952	6,400	7,426
Wht. flr., $...	19,971	20,581	24,611	35,767	47.473

Export of other agricultural products, in the fiscal years 1916 and 1917, in thousands of dollars: hay, 5849 and 4219; potatoes, 445 and 3299; clover and grass seed, 387 and 1256; apples, 577 and 571.

Export of the principal animal Canadian produce in the fiscal years 1916 and 1917, in thousands of dollars: bacon and hams, 27,090 and 43,778; cheese, 26,691 and 36,721; cattle, 12,626 and 7884; hides and skins other than fur, 6759 and 7147; dressed and undressed furs, 4778 and 5755; horses, 4701 and 4385; wool, 1498 and 2554; butter, 1019 and 2492.

Export of principal Canadian mining produce in the fiscal years 1916 and 1917, in thousands of dollars: copper, 14,670 and 22,745; gold, 16,870 and 19,671; silver, 14,298 and 15,871; nickel, 7715 and 8926; coal, 6033 and 6817; asbestos, 2962 and 4142; lead, 55 and 1188.

Leading forest exports in the fiscal years 1916 and 1917, in thousands of dollars: planks and boards, 23,880 and 25,977; wood blocks for pulp, 5744 and 6448; shingles, 3644 and 4047; pine deals, 1250 and 1574; spruce and other deals, 9677 and 10,340; logs, 1079 and 824.

The larger fishery exports: canned salmon, 6306 and 6288; dry salted codfish, 5418 and 5827; canned lobsters, 2672 and 3639.

By principal countries, imports for consumption and total exports have been valued as follows for fiscal years, in thousands of dollars:

	Imports		*Exports*	
	1916	*1917*	*1916*	*1917*
United States.....	398,694	677,632	320,225	486,871
United Kingdom...	80,109	121,738	463,081	756,071
British West Indies	6,259	14,240	4,135	5,179
Japan	4,015	8,123	998	1,282
British Guiana....	5,637	7,198	1,212	1,689
British India.....	6,780	6,900	1,242	1,460
France	5,949	6,481	36,086	66,653
Dominican Rep....	4,020	3,889	13	40
Argentina	3,971	2,702	2,399	1,675
New Zealand......	4,284	2,248	3,362	3,334
Newfoundland	1,578	2,148	5,071	6,871
Russia	124	24	6,737	4,186
Italy	920	1,227	10,733	11,469
Australia	3,423	762	7,773	6,577
Belgium	59	15	335	665
Germany	86	14	....	....

The foregoing table includes coin and bullion. Imports of coin and bullion from the United States and exports thereto in the fiscal year 1916 were $28,197,146 and $103,555,818 respectively; in 1917, $13,411,963 and $196,291,917.

SHIPPING. Vessels entered, including those employed in the coasting trade, numbered 132,304, of 65,357,422 tons, in the fiscal year 1915, and cleared 126,888, of 61,346,713 tons; in 1916, entered 145,712, of 64,727,779 tons, and cleared 140,087, of 61,702,743 tons. The number of sea-going vessels entered in 1915 was 17,182, of 13,132,944 tons, and cleared 16,730, of 12,269,642 tons; in 1916, entered 19,146, of 12,616,927 tons, and cleared 18,616, of 12,210,723 tons. Of the latter tonnage, 5,911,826 tons were British, 1,985,098 tons Canadian, and 4,313,799 tons foreign.

COMMUNICATIONS. Canada has a system of canal, river, and lake navigation over 2700 miles long. Vessels from ports on the Great Lakes reach the Atlantic without breaking bulk. In 1916, 29,802 vessels, of 20,499,868 tons, passed through the canals, carrying over 263,648 passengers and 23,583,491 tons of freight. The total length of steam railway in operation, June 30, 1916, was 37,434 miles, as compared with 35,582 miles in 1915, 21,104 in 1909, and 17,657 in 1900. The 1915 and 1916 mileage was distributed as follows: Ontario, 10,702 and 11,320; Saskatchewan, 5327 and 5378; Quebec, 4677 and 4733; Manitoba, 4498 and 4309; Alberta, 3174 and 3894; British Columbia, 3100 and 3604; New Brunswick, 1962 and 1957; Nova Scotia, 1367 and 1436; Prince Edward Island, 275 and 275; Yukon Territory, 102 and 102; in the United States, 398 and 426; total, 35,582 and 37,434. The mileage given as being in the United States relates entirely to lines which cross American territory in passing from one point to another in Canada and which are operated wholly for the purposes of Canadian traffic. There is a large additional mileage in the United States which is owned and operated by Canadian railways. In the fiscal year 1916, gross railway earnings were $261,888,654, and working expenses $180,542,259; in 1915, $199,843,072 and $147,731,099; in 1914, $243,083,539 and $178,975,259. In 1916, the freight carried was 109,659,088 tons, and the earnings therefrom $184,099,887; the number of passengers was 49,027,671, earnings therefrom $66,763,261.

During 1917, the gross earnings of the Canadian railways were the largest on record exceeding the total of $263,527,157 over the previous record year of 1916. For the three largest lines the Canadian Pacific, the Grand Trunk and the Canadian Northern, which normally represented about 80 per cent of the total railway business of the Dominion, the gross returns ended June 30, 1917, amounted to about $230,000,000, and on this basis the gross earnings for the year were estimated to exceed $285,000,000. This figure should be compared with $146,738,214 for 1907 and $52,353,276 for 1897. In the latter year the gross earnings per mile amounted to $3163, while by 1917 they had increased to about $7300. In 1897 there were 16,550 miles of railway in operation in the Dominion and by 1917 there was an estimated total of about 38,800 miles. A Royal Commission appointed by the government spent considerable time in the latter part of 1916 and the early part of 1917 in an inquiry into the railway situation in Canada. The recommendations in the report of this Royal Commission which consisted of Sir Henry L. Drayton and W. M. Acworth, and A. H. Smith, president of the New York Central, who submitted a separate report, were not acted upon by the government. In August, 1917, by act of parliament, the entire Canadian Northern including express, telegraph, steamship, elevator, and other subsidiary interests was taken over by the government which assumed the liability and agreed to pay for the stock, the value to be assigned by the Board of Arbitration; actual possession was to come after the arbitration proceedings. In 1917, government ownership in Canada embraced the 2002 miles of National Transcontinental which had been built as the Moncton-Winnipeg section of the Grand Trunk Pacific with the Intercolonial with 1553 miles, the Prince Edward Island Railway with 275 miles, and the Canadian Northern with 9600 miles, making a total of 13,430 miles to be owned and operated by the government. Naturally, during the year, there was a minimum of construction and 206.5 miles of track by six companies was the record. The largest piece of new line was 73.3 miles on the Edmondton-Dunvegan and British Columbia railway in Alberta, the Canadian Northern building an aggregate of 92.3 miles of new track, while the Grand Trunk and the Canadian Pacific railways carried on improvements at their terminal at Vancouver. The Toronto Union Station was about 55 per cent nearing completion. In April, 1917, the tunnel of the Canadian Northern Railway through Mount Royal at Montreal was placed in operation.

The Minister of Railways and Canals for the Dominion of Canada stated in his annual report for the year ended March 31, 1917, that rails had been laid on all but ninety-two miles of the 424-mile Hudson Bay R. R. The part unfinished was between the second Nelson River crossing and Port Nelson. All but eleven miles of this had been graded, and it was reported that rails would be laid to Port Nelson. Of the estimated cost of $26,000,000 for the railway and the harbor, $18,175,000 had been spent. Work on the harbor was cut down on account of war conditions.

The telegraph systems consist of lines owned and operated by the Dominion government and lines owned and operated by railway and telegraph chartered companies. The total length of line in 1914 was 46,333 miles, of which 10,356 miles were government and 45,977 miles companies'. The latter figure represented 184,602 miles of wire. Government line in 1915, 11,497 miles; in 1916, 11,843 miles. In 1915, the government maintained fifty-nine radiotelegraph stations.

Post offices on March 31, 1916, numbered 13,057, as compared with 13,348 in 1915, 13,811 in 1914, 14,178 in 1913, and 9627 in 1900. Postal revenue in 1916 was $22,739,699, and expenditure $19,890,427.

FINANCE. The standard of value in Canada is gold. The monetary unit is the dollar, equivalent to the American dollar. The system of public finance includes a consolidated fund and miscellaneous accounts. To the consolidated fund are paid in the revenues, and out of it are paid the expenditures, properly relating to the fiscal year, which ends on March 31. The miscellaneous accounts deal with loans, debt-redemption, railway administration, capital expenditure on public works, etc. The revenue exceeded $100,000,000 for the first time in 1909-10, and in 1916-17 for the first time it exceeded $200,000,000.

In his budget speech on April 24, 1917, the minister of finance stated that during the fiscal year 1916-17 the revenue had enabled the country to pay from income all current and capital expenditure, all interest charges upon the increased national debt, and all pension outlays, and, in addition, to devote the sum of $60,000,000 to payment of the principal of the war expenditure.

The total expenditure and the total receipts of the Dominion government are shown in the table below for fiscal years. The several items are indicated as follows: *a* expenditure chargeable to consolidated fund; *b*, expenditure chargeable to capital; *c*, railway subsidies; *d*, other charges; *e*, total disbursements; *f*, revenue on account of consolidated fund; *g*, other receipts; *h*, total receipts; *i*, difference between receipts and disbursements; *j*, sinking funds; and *k*, net difference between receipts and disbursements (that is, the net excess of disbursements).

	1914	*1915*	*1916*	*1917*
	$	$	$	$
a	127,384,473	135,523,207	130,350,727	148,599,343
b	37,180,176	41,447,320	38,566,950	26,919,301
c	19,036,237	5,191,507	1,400,171	959,584
d	2,640,162	65,936,492	169,384,654	339,702,502
e	186,241,048	248,098,526	339,702,502	498,342,388
f	163,174,395	133,073,482	172,147,838	232,601,294
g	......	......	1,555	......
h	163,174,395	133,073,482	172,149,393	232,601,294
i	23,066,653	115,025,044	167,553,109	265,741,094
j	1,371,428	1,645,812	1,773,021	1,471,697
k	21,695,224	118,379,232	165,780,088	264,269,397

In the foregoing table, it may be noted that item *d* ("other charges") shows an extraordinary increase, from $2,640,162 in the fiscal year 1914, to $339,702,502 in 1917. This increase is in consequence of expenditure on account of war appropriation. This expenditure (which is exclusive of militia expenditure) amounted to $60,750,476 up to March 31, 1915; in the fiscal year 1916, $166,197,755; total up to March 31, 1916, $226,948,231.

Main heads of revenue and expenditure on consolidated fund account are shown below for fiscal years, in thousands of dollars:

	1914	*1915*	*1916*	*1917*
Revenue:				
Customs	104,691	75,941	98,649	134,044
Excise	21,452	21,480	22,428	24,412
Post office	12,955	13,047	18,859	20,902
Railways	13,394	12,149	18,428	23,540
Miscellaneous	10,682	10,457	13,783	29,703
Total	163,174	133,073	172,148	232,601
Expenditure:				
Charges on debt *	14,752	17,937	23,926	37,771
Provincial subsidies	11,280	11,452	11,452	11,469
Civil government	5,608	6,158	6,409	6,466
Public works †	19,008	19,844	12,039	8,633
Defense	11,151	10,061	4,682	4,302
Collect'n of revenue	39,085	42,233	47,902	58,800
Other	26,501	28,339	23,941	26,158
Total	127,384	135,523	130,351	148,599
Surplus	35,790	‡ 2,450	41,797	84,002

* Includes charges of management, interest, sinking funds, and premium discount and exchange.

† Expenditure from income. ‡ Deficit.

The public debt of the Dominion on March 31, 1917, was $1,382,003,268; assets, $502,816,970; net debt, $879,186,298, as compared with $615,156,171 in 1916, $449,376,083 in 1915, and $335,996,850 in 1914. Interest on the debt: in the fiscal year 1917, $35,802,567; in 1916, $21,421,585; in 1915, $15,736,743; in 1914, $12,893,505. On the basis of an estimated population of 8,361,000, the net debt on March 31, 1917, represents $105 per capita, there being an increase of $62 per capita over 1914. The net debt in 1917 showed an increase of $543,189,448 over 1914, this increase being due to the great war.

GOVERNMENT. The legislative power of the Dominion is exercised by a parliament of two chambers, the Senate and the House of Commons. The ordinary legal duration of a parliament is five years, but the duration of the 12th Parliament was extended a year by Act of the British Parliament of June 1, 1916. The 12th Parliament dates from October 7, 1911, the date of return of election writs; it opened November

15, 1911, was prorogued September 20, 1917, and dissolved October 6, 1917, having thus lasted for six years, or longer than any previous parliament of the Dominion. Senators, nominated for life by the governor-general, numbered 87 in the 12th Parliament; in the 13th Parliament they number 96. Members of the House of Commons are elected by direct male suffrage for the duration of Parliament. In the 12th Parliament their number was 221; in the 13th Parliament it is 234, apportioned as follows: Ontario, 82; Quebec, 65; Nova Scotia, 16; Saskatchewan, 16; Manitoba, 15; British Columbia, 13; Alberta, 12; New Brunswick, 11; Prince Edward Island, 3; Yukon Territory, 1.

The executive authority is vested in the King of Great Britain and Ireland and is exercised in his name by a governor-general (appointed by the crown) and privy council, or ministry, responsible to the House of Commons. The governor-general in 1917 was Victor Christian William Cavendish, Duke of Devonshire, who was appointed August 19, 1916, and assumed office November 11, 1916, in succession to Prince Arthur, Duke of Connaught and of Strathearn, who assumed office October 13, 1911.

MINISTRY. The Conservative ministry (the ninth Dominion ministry) of Sir Robert Laird Borden, which succeeded the Liberal ministry of Sir Wilfrid Laurier October 10, 1911, became a coalition ministry on October 12 when five Liberals took places in the cabinet. This ministry was composed as follows in 1917 (dates of appointment are here given in the case of members who entered the ministry after October 10, 1911): premier and president of the privy council, Sir Robert Laird Borden; president of the privy council, Newton Wesley Rowell* (October 12, 1917); minister of trade and commerce, Sir George Eulas Foster; minister of the interior, Arthur Meighen (October 12, 1917), succeeding Dr. William James Roche (October 29, 1912); minister of public works, Frank B. Carvell (October 13, 1917), succeeding Charles C. Ballantyne* (October 3, 1917), succeeding Robert Rogers (October 29, 1912); minister of railways and canals, Dr. John Dowsley Reid (October 12, 1917), succeeding Francis Cochrane; minister of finance, Sir William Thomas White; postmaster-general, Pierre Edouard Blondin (January 8, 1917), succeeding Thomas Chase Casgrain (October 20, 1914; died December 29, 1916); minister of marine and fisheries and of the naval service, Charles C. Ballantyne (October 13, 1917), succeeding John Douglas Hazen; minister of justice, Charles Joseph Doherty; minister of militia and defense, Major-Gen. Sydney C. Mewburn* (October 12, 1917), succeeding Sir Albert Edward Kemp (November .23, 1916), succeeding Lieut. Gen. Sir Sam Hughes; minister of overseas forces in the United Kingdom, Sir George Halsey Perley (October 31, 1916); secretary of state and minister of mines, Martin Burrell (October 12, 1917), succeeding Arthur Meighen (August 25, 1917), succeeding Esioff Léon Patenaude (January 8, 1917), succeeding Pierre Edouard Blondin (October 6, 1915); minister of labor, Thomas Wilson Crothers; minister of immigration and colonization, James A. Calder* (October 12, 1917), minister of inland revenue, Albert E. Sévigny (January 8, 1917), succeeding Esioff Léon Patenaude (October 6, 1915); minister of customs, Arthur L. Sifton * (October 12, 1917), succeeding Dr. John Dowsley Reid; minister of agriculture, Thomas A. Crerar (October 12, 1917), succeeding Martin Burrell; ministers without portfolio, A. K. MacLean (October 23, 1917) and G. D. Robertson (October 23, 1917). The foregoing ministers constituted the cabinet. The following were also members of the ministry but not of the cabinet, in 1917: solicitor-general, Hugh Guthrie* (October 4, 1917), succeeding Arthur Meighen (June 26, 1913); parliamentary secretary of militia and defense, Franklin B. McCurdy (July 19, 1916); parliamentary under secretary of state for external affairs, Lieut. Col. Hugh Clark (October 26, 1916). The premier of the 8th Dominion ministry, Sir Wilfrid Laurier, continued in 1917 as leader of the opposition.

Each of the Canadian provinces has an elected legislature, a lieutenant governor (appointed by the governor-general), and a responsible ministry.

HISTORY

CONSCRIPTION The question of the draft was the chief political issue of the year. Sir Robert Borden announced in May that he had determined to introduce compulsory military service. According to official figures given out at that time there were 136,400 Canadians in France and 180,000 in England, and the losses totalled 100,000. On June 11 the conscription bill was introduced. Sir Robert Borden in introducing it gave figures which estimated the number of available men in Canada between twenty and thirty-four years of age at over one million. He declared that there was no new principle in the measure for it was based upon the statute which had been the law of the land since 1868. To secure united support for it he appealed to Sir Wilfrid Laurier to coöperate in forming a coalition cabinet but the latter refused. Sir Wilfrid Laurier criticized the government for introducing a measure to which it had declared it would never resort. If there was a lack of harmony in Canada it would be the government's fault. He argued that under the present laws the government had no power to send forces outside Canada, nor had Parliament any right to make such a serious change in the law without the consent of the people. He desired an election in order that the people should decide. He said there were already forty-eight parliamentary vacancies and this remnant of the original Parliament could not be regarded as in any sense representative. Before introducing such a measure the government should have carried on campaigns of education as the English government had done; whereas its present course was bringing about a division between races and classes. He said that French Canadians had not enlisted as they ought to have done and that no one regretted it more than he, but that the remedy would have been an appeal to the country. There was much comment on Sir Wilfrid Laurier's speech. Official figures were published on June 15 showing the number of French Canadians enlisted. From Quebec there were 6979 as against 22,000 English-speaking men. Although the English-speaking men formed only one-sixth of the population they made up 75 per cent of the enlistments. In the West the French Canadians furnished 5904 although the French Canadians outside

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* Liberal.

Quebec were only one-sixth of those in the province. In certain French Canadian papers the opposition to the government went so far as to demand separation; that is to say, the creation of a new province of lower Canada which should be governed by the French Canadian majority and which should be directly subject to the crown. The bill provided for reënforcements up to 100,000 men from ten classes, the age for service being from twenty to forty-five. It was carried in its second reading on July 8 by 118 votes against 55, Sir Wilfrid Laurier's proposed amendment for a referendum which was supported by the whole Quebec delegation being defeated by 111 to 62. It passed the Lower House on July 24, and the Senate early in August. In the Senate it won after a sharp debate and with a rather narrow majority (54 to 39). Seven French Conservatives voted for it and two French Conservatives voted against it. Nine English-speaking Liberals, including the Liberal leader, Senator Bostock, voted for it. An amendment to the effect that the bill should not be enforced until after the elections was defeated by ten votes. At about the same time a meeting was held at Toronto under the name of the "Win the War" convention, consisting of eight hundred delegates. Speeches were made demanding a union of parties to enforce conscription and the continuance of Sir Robert Borden in office. The convention passed a resolution in favor of a national government, conscription, sufficient taxation of war profits, three month's home leave for soldiers in France with increased pay, and against a general election during the war.

Opposition to Conscription. Meanwhile a violent opposition to the measure had developed, especially among the French Canadians. In July there was rioting in Montreal. At an anti-conscription meeting there a Liberal labor member of parliament, Mr. Verville, having declared that many Canadian soldiers were retained in England in order that their physical condition might not be known in Canada, was interrupted by Colonel Rexford, formerly in command of an over-seas battalion, who denied the charge. Attempts were made to seize Colonel Rexford, and he was taken away under the protection of the police. Stones were thrown at his car in passing. At another meeting in the city of Quebec violent speeches were made by political leaders. Mr. Lavergne declared that if Canadians were to be drafted their only choice was between dying in Europe or dying in Canada and as for him, he preferred to fall on Canadian soil. After the meeting the mob attacked two of the newspapers which supported conscription. At a meeting at Hull Mr. Watters, president of the Dominion labor congress, denounced Sir Robert Borden for breach of faith in not consulting organized labor before bringing in the conscription bill; and characterized Mr. Lloyd George as one of the trickiest politicians that ever disgraced humanity. It was reported that Sir Wilfrid Laurier had notified the prime minister that he should not be able to keep his followers in check if conscription were brought in without consulting the people. Sir Lomer Gouin, prime minister of Quebec, declared himself in favor of an immediate appeal to the people and opposed to an extension of the parliamentary term.

At the Winnipeg convention early in August the Liberals of the four western provinces confirmed their choice of Sir Wilfrid Laurier as leader and attacked the Borden government. A war resolution was passed to the effect that it was the duty of the people to support the vigorous prosecution of the war; to maintain the forces at the front and supply the necessary reënforcements; to provide for the organization of the production of food, munitions, and other war necessities with the greatest possible efficiency; to put an end to profiteering either by nationalization of industry or by controlling establishments; finally that the Canadian government confer with the British authorities to ascertain the nature of the services that could best be rendered by Canada. An amendment to the effect that compulsion should be introduced if necessary to secure reënforcements was rejected by an overwhelming majority. There was some evidence throughout the West that a good many western Liberals did not accept this policy.

After the bill was passed, however, Sir Wilfrid Laurier declared that while he himself was opposed to it in principle he would support it now that it had become law. The French element in the Liberal party became more and more threatening in their opposition. Toward the end of August a general strike was called in Montreal but it failed and an attempt to hold an enormous mass meeting was also a failure, but on August 29 a mass meeting of 5000 people was held in that city and when the police tried to break up a procession after the meeting they were driven back with stones. One of the speakers at the meeting went so far as to say that if the conscription went into effect Sir Robert Borden and the members of the government should die; and another declared that if he were arrested for speaking against conscription he was sure he would be rescued from jail. In Quebec the French press of all parties urged that the enforcement of conscription should be deferred until after the election.

Coalition Government. After the Winnipeg convention the western Liberal leaders, while refusing to enter a coalition government under Sir Robert Borden, declared that they favored a national rather than a party government and were willing to take office under Sir George Foster, and others whom they named. On August 29 Sir Robert Borden announced this fact to a caucus of the party and offered to resign, but Sir George Foster refused to accept the responsibility of forming a government and declared his belief that it was necessary that Sir Robert Borden should continue in office. These views were supported enthusiastically by the caucus and the western Liberals were informed of the result. On October 12 a coalition government was formed under Sir Robert Borden. Five Liberals took their places in the cabinet. An inner war cabinet was planned after the British model to consist of seven members, of whom four were Conservatives and three Liberal. The composition of the new cabinet has been given above.

The Liberals who joined the government represented Ontario, Alberta, Saskatchewan, New Brunswick, and Nova Scotia. Sir Wilfrid Laurier was not included and as he still had a large following there was much speculation as to what his course would be. Thus Sir Robert

Borden's long struggle to bring about coalition at length succeeded. There had been strong opposition and when the Winnipeg Convention of western Liberals repudiated coalition and when Liberal leaders said if it were possible at all it could only be on condition that he withdrew from the leadership the prospects seemed dark. He had at once declared that he would withdraw (as noted above), but this was not permitted by his party and even some of the Liberals were opposed to it. The cause of coalition gradually gained ground. It was generally assumed that the new cabinet was assured of so strong a majority at the coming general elections that they could proceed without question and while Quebec was bitterly opposed to conscription it seemed probable that if a large majority favored it, Quebec would present no obstacle.

The government's programme as stated by Sir Robert Borden after the formation of the new Union government included the vigorous prosecution of the war, the immediate enforcement of the military service act; universal woman suffrage; sufficient taxation of war profits and the prevention of excessive profits; increased taxation of incomes; improvement of transport facilities; coöperative management of several railway systems; development of shipbuilding; encouragement of settlement on land; increased production and coöperation in agriculture, and in general the development of the resources of Canada.

Changes aiming at a more concentrated organization during the war were announced on October 24. These were to consist in: (1) A war cabinet, and (2) a reconstruction and development committee, each to be composed of ten members, and both together comprising all the members of the ministry and each to have the prime minister as its chairman. Unlike the British system in which the war cabinet of five was supreme while the large body of ministries was subordinate the Canadian system consisted of two divisions on the principle of joint responsibility.

War Time Election Measures. Important franchise measures had been carried by the government toward the close of the parliamentary session. One of these bestowed the suffrage to the troops of the Canadian expeditionary forces, including those who had not been Canadian residents when they enlisted, and bestowed it also on Canadian nurses in military hospitals. Another, the War Time Election Act, disfranchised natives of enemy countries who had been in Canada less than fifteen years and also the Mennonites and Doukhobors who had come to Canada under guarantee of immunity from military service. Furthermore, it gave the vote to the widows, wives, mothers, and sisters of soldiers, the number of women thus enfranchised being estimated at 500,000. The new franchise measures were defended by Sir Robert Borden on September 10 on the principle that they were service measures; that aliens as they were not called upon to fight should not receive the franchise; that the vote for the female relatives of soldiers was only fair as they had made the greatest sacrifice, and that, moreover, thousands of soldiers being unable to vote, it was right that the women related to them should have the privilege. The measures were vigorously opposed by Sir Wilfrid Laurier who objected especially to the denial of the vote to aliens who had been naturalized since 1902. He contended that even if they were Germans or Austrians they had left their lands on account of tyranny and surely would not turn traitor to the country which had given them their freedom, and he pointed to the United States which, with a far greater relative number of Germans than Canada, had passed no such legislation. The effect of the measure would really be to disfranchise Slavs and Ruthenians for of the pure Germans few had come to Canada. The government advocates argued that to allow persons hampered by a doubtful or double loyalty to have a voice in the policy of the country in this crisis was well-nigh treasonable, and they taxed the Liberals with counting on alien support at the polls.

Electoral Campaign. As the election approached the issues were outlined in speeches by Sir Robert Borden and Sir Wilfrid Laurier. The former characterized the Military Service Act as a military measure which called the rich as well as the poor to the colors and in fact bore more heavily on the rich since it was harder to claim exemption on the ground that their labor was needed at home. An army of over 400,000 men had been raised by voluntary enlistment (which at the same ratio in the United States would have raised 5,000,000) and of these 350,000 had gone over sea. The conscription measure had been introduced only when it was found that voluntary enlistment was no longer sufficient. Sir Wilfrid Laurier was received with enthusiasm at the first meeting of the campaign in Quebec, where he had been a candidate for the first time exactly forty years before. He said that the war was the dominant question which dwarfed every other issue. The actual invasion of Canada was not to be feared but it was to be feared that the Power which had violated every law would dominate the world. The Premier of Quebec, Sir Lomer Gouin, in a speech that followed, said that the French Canadians were not afraid of isolation. That there was no power in the world to impose conscription on the Canadian people against their will. He declared that if conscription was approved by the people of Canada he would accept it and support it. As the campaign went on it seemed that the Liberal forces in Quebec were gaining in strength. The date of the election was fixed for the middle of December. While the government that asked for popular confirmation was still the government of Sir Robert Borden it contained Liberal as well as Conservative leaders. Opposed to it were the Liberals under the leadership of Sir Wilfrid Laurier who still objected to an alliance with the Conservatives, and the Nationalists under Mr. Bourassa, who consisted of the thoroughgoing French-Canadian opponents of conscription. The issue was perfectly clear: Sir Wilfrid Laurier stood for voluntary service; Sir Robert Borden declared that the voluntary service had failed and that compulsion was necessary now.

More specifically the programme of Sir Wilfrid Laurier was as follows: In the first place, he said that to introduce conscription without a previous educational campaign was a grave mistake. Another criticism of the government's plan was that, while it drafted human life, it did not draft the wealth and resources and services of those who were over the military age. If the Liberal party were returned to power he said his policy would be to go no further with the Conscription Act until the people had had a chance to pronounce upon it by referendum. He pledged himself to submit it to the people and carry out their decision. He declared that he would make a strong appeal for voluntary recruiting and he pointed to the example of Australia. He attacked the War-time Election Act disfranchising aliens. As to economic issues, he said he would remove the war duty of 7½ per cent of the general tariff and the 5 per cent on British goods. Other features of his policy were free agricultural implements for the western farmers; control of food-producing factories, allowing a fair interest on investment, and the suppression of profiteering. At the end of October it was announced that a petition had been entered in the superior court of Montreal to have the Military Service Act declared unconstitutional.

General Election. The election held on December 17 gave the Unionists a majority in Parliament of about fifty over the old Liberal party. Quebec was almost solidly for Sir Wilfrid Laurier, and the Liberals gained some seats in the Maritime Provinces, and a few in Ontario, but the west, with the exception of Alberta, which was about evenly divided, gave the government a strong majority. The women's vote, under the new franchise measure mentioned above, appeared to have been for the most part cast for the government. At the close of the year the returns from the soldiers at the front were not known but it was not supposed that they would change the result. Thus the Unionists had a safe majority, but the Liberals, who still followed Sir Wilfrid Laurier, together with those Liberals known as Liberal Unionists, who supported the coalition government, had a membership of 133 out of the 235 in the House. Thus the old Conservatives were in the minority and the Liberal Unionists held the balance of power. The latter stood behind the government in the matter of conscription but might at any time break away and join the old Liberal element if the government did not make good the pledges in its programme. The situation at the close of the year seemed difficult, for not only was national sentiment in Quebec violently opposed to taking part in the war, but the Liberals of the Province were equally opposed to conscription and in the election they had gained sixty-two out of sixty-five seats. Moreover, only about half of the men required to register under the Military Service Act had done so and about 90 per cent of these had applied for exemption. If the government attempted to enforce rigidly the terms of the draft it apparently would run the risk of causing a rebellion in Quebec, which comprised a quarter of the whole population of the Dominion, that is to say, about 2,000,000 inhabitants, of whom 1,600,000 were French. On the other hand, if it did not enforce the draft in Quebec the success of its political campaign seemed to be meaningless.

The election elicited much bitter comment, especially from the newspapers in the French language. Some of them lamented the break it revealed between the west and the east and blamed the extreme nationalists, as represented by M. Bourassa, for having misstated the aims of Great Britain and injected the race issue into the campaign. A French Canadian deputy introduced in the Quebec Provincial Parliament the following resolution: "That this House is of the opinion that the Province of Quebec would be disposed to accept the rupture of the Federation pact of 1867, if in the opinion of the other provinces it is believed that the said province is an obstacle to the union and the progress and the development of Canada."

Other Events. At the close of 1916 the revenue of Canada was in advance of the receipts for 1915. The favorable balance of trade which in 1915 was $203,582,071, was increased at the beginning of 1916 by $122,000,000, the figures being $1,091,706,403 exports, $776,726,991 imports, $324,979,412 balance. The exports that were classed as agricultural products fell for the first time in many years to second place; the exports classified as manufactures, taking the first place. On January 10 an issue of war-saving certificates was announced. These were redeemable within three years in denominations of $25.00, $50.00, and $100.00 each and could be obtained at any bank or postal money order office at the price of $21.50, $43.00, and $86.00 respectively. On February 1 the Canadian Parliament unanimously voted a war credit for the coming year of $500,000,000. Sir Robert Borden had estimated the cost for the coming fiscal year as $443,274,000. On March 12 the third Canadian domestic war loan for $150,000,000 in 5 per cent twenty year bonds at 96 was placed on the market. This was oversubscribed. The previous war loans for $45,000,000 and $100,000,000 respectively had been subscribed for twice over. The total subscriptions amounted to $250,000,000, of which $190,000,000 came from the public and $60,000,000 from the banks. On April 24 the finance minister, Sir Thomas White, declared that by the end of the year the national debt might reach $1,500,000,000 on account of increased war expenses. On July 25 the House voted a four per cent income tax, with a graduated super-tax of 2 to 25 per cent. On November 12 the campaign for the Victory Loan, amounting to £30,000,000, was begun throughout the Dominion. Thousands of business houses suspended their work and used their advertising space in the newspapers for appeals on behalf of the loan.

In Canada in 1917 food control was still far behind the point at which it had been carried in Great Britain or in the United States, and the food controller, Mr. Hanna, who wished to take advanced measures, was the object of much criticism. Yet it appeared that if the food question were not taken up as vigorously in Canada as in Great Britain the rations of the soldiers at the front would certainly have to be cut down. Very drastic regulations were evidently needed.

On August 10 an attempt was made to blow up the country house of Lord Athelstan, owner of the Montreal *Star*, which had strongly supported conscription. Some arrests followed, and, according to the evidence, there had been a meeting at the store of one Eli Lalumière where it was agreed to murder Sir Robert Borden, Sir William Mackenzie, and others in the government, and to destroy the offices of four material newspapers, and that dynamite should be stolen from the Martineau quarries. The dynamite was said to have been stored at the house of one Tremblay, whence it was taken in a motor car to Lord Athelstan's.

See Agricultural Credit; Arbitration and Conciliation, Industrial; Financial Review.

CANALS. The congestion on the railway systems and the great amount of transportation incidental to the war attracted increased attention to the canals and inland waterways of both America and Europe. In the United States, with a few notable exceptions, such as the New York State Barge Canal and the canalization of certain western rivers, there had not been developed in recent years any consistent policy for extending or even utilizing the canal systems, and as a result the inland waterways were not in a position to afford the relief needed. Nevertheless, during the year, efforts were made to construct barges of steel, wood, and concrete, and some of the larger corporations expressed their intention of developing their own fleets of barges for this purpose.

Late in the year the United States Department of Commerce reported that thousands of tons of freight were being carried by river barges, and that new terminals were under construction at Memphis, Nashville, St. Louis, Peoria, St. Paul, and Minneapolis, while improvements were being made at New Orleans, Montgomery, and Mobile. The government barges used on the Mississippi were supplemented by steamers under the jurisdiction of the Department of Commerce, and the authorities of New York State had requested the operation of government barges on the new New York State Canal. The United States Steel Corporation had under construction a fleet of seventy barges for use on the upper Ohio and Monongahela rivers, while a fleet of twenty-four barges of 2000-ton capacity and four tow barges were being built for use from St. Paul to St. Louis. The Alabama rivers were carrying a large amount of foodstuff in barges and the same was true of other southern waters.

New York Barge Canal. On June 27, 1917, occurred the centennial anniversary of the signing of the first contract for the construction of the Erie Canal, while on July 4, 1817, actual construction of the waterway was begun by former excavation just west of Rome. It was the centennial year that marked the virtual completion of the New York State Barge Canal, and its promise of future usefulness was due rather to the extraordinary conditions developed by the war than to its intrinsic merits or the provision that had been made for its utilization. In fact, at the end of the year, while the canal was virtually completed, there was an utter lack of boats, not merely a lack of large sized craft suitable for the increased dimensions of the canal, but of sufficient boats of any description. The congestion and shortcomings of the railways naturally drew considerable attention to the New York Canal as a means of forwarding bulk cargoes, and the Canal Board made recommendations through the legislature to the United States government asking that Federal aid should be given to boat building. It was believed that barges built by Federal authorities could be operated by the Shipping Board Corporation and thus relieve the railways between New York and Buffalo, a certain amount of whose traffic was water borne on the Great Lakes. The Canal Board proposed to build a grain elevator at the Gowanus Bay terminal in New York Harbor and other improvements in connection with it were contemplated.

It was not until the end of the year, however, that any special effort was made by private corporations to build suitable barges. A boatbuilding corporation in northern New York determined to build for its own account four barges of 750 tons' capacity for traffic during 1918 on the Barge Canal. It also expected to build further contracts for operating concerns that were being organized. The General Electric Company which had extensive works at Schenectady along the route of the canal caused plans to be prepared for a special type of barge to carry its product from its factory to various branches and depots.

In November, just before the close of navigation, a practical test of the New York State Barge Canal was made by the passage of two submarine chasers from Oswego to Troy. These vessels were built on the St. Lawrence River and were 110 feet in length, 15½-foot beam, drawing 7 feet of water. They made the trip without difficulty and the various locks were found to work readily and rapidly.

Canals at Sault Ste. Marie. The lake commerce passing through the canals at Sault Ste. Marie, Michigan and Ontario, in 1917, showed considerable decrease over that for 1916. In 1917, the registered tonnage amounted to 65,307,233 net tonnage as compared with 69,824,463 in 1916, while the freight actually carried in 1917 amounted to 89,813,898 short tons as compared with 91,888,219 short tons in 1916. The decrease in registered tonnage was 6 per cent and in freight 2 per cent in the two years compared. The United States canal was opened April 24 and was closed December 17, 1917, giving a season of 238 days, while the Canadian canal was opened April 25, and closed December 17, 1917, making a season of 237 days. During this period, 19,569 steamers, 1943 sailing vessels, and 1373 unregistered craft passed through as compared to 21,606 steamers, 2461 sailing ships, and 1340 unregistered craft in 1916, there being 14,611 lockages as compared with 16,190 lockages in 1916. The number of passengers for the year fell from 54,922 in 1916, to 38,339 in 1917, while the iron ore decreased from 63,452,107 short tons in 1916 to 61,374,090 short tons in 1917. Except in coal, which showed an increase for hard coal of from 2,210,219 short tons to 2,562,199 short tons in 1917, and lumber, which increased from 341,352 M. ft. B. M. in 1916 to 350,609 in 1917, there was a decrease in the amount of important commodities handled. Wheat fell from 226,063,315 bushels to 185,899,449 bushels in 1917; grain from 93,189,561 bushels in 1916 to 67,423,980 bushels in 1917; copper from 126,043 short tons in 1916 to 118,182 short tons in 1917; manufactured and pig iron from 202,194 short tons in 1916 to 102,082 short tons in 1917; general merchandise from 1,649,020 short tons in 1916 to 1,491,714 short tons in 1917. Of the vessels passing through the canals 17,536 with a registered tonnage of 53,413,807 used the American canal and 5349 vessels with a registered tonnage of 11,893,426 used the Canadian canal in 1917. The United States canal handled the bulk of the freight, as 56,204,519 short tons passed through east bound, and 18,157,331 short tons passed through west bound, or a total of 74,361,850 short tons, while the east bound freight on the Canadian canal was 13,841,966 short tons and the west bound freight was 1,610,082 short tons, or a total of 15,452,048 for the Canadian canal.

Lachine Canal. On the Lachine Canal of the St. Lawrence River, 70,921 tons more grain and miscellaneous cargo were carried by vessels passing through in the 1917 season, over what was carried in 1916. In 1917, there were more passengers, more vessels, more coal, more flour, and more sand carried than in 1916, but less grain and fewer agricultural products. The total combined tonnage for all the trips made through the canal amounted to 4,145,836, an increase over 1916 of 144,663 tons. The cargo tonnage was 3,335,943, while 69,910 passengers were carried.

Lake Washington Canal. The official opening of the Lake Washington Government Canal at Seattle, Wash., took place on July 4, 1917. As early as 1856, Gen. George B. McClellan, the United States engineer officer, had recommended to Jefferson Davis, Secretary of War, the construction of a waterway connecting Lake Washington through Lake Union with Puget Sound. In 1890, the United States government made a survey of such a route, and later the right-of-way was secured, and presented to the government. In 1910, the United States government appropriated $2,075,000 to build the locks, and late in the following year the excavation was begun, through the coöperative action of the city, county, and State. The total cost of the canal was approximately $5,000,000, including the right-of-way, and some 4,000,000 yards of excavation and dredging have been executed, and 320,000 yards of concrete used in lock and other construction. The Lake Washington Canal is entirely in the city of Seattle and extends from Puget Sound, through Shilshole and Salmon bays, and Lake Union to Union Bay, on the western shore of Lake Washington, a distance by channel of approximately eight miles. Aside from the locks, one of the most notable structures involved in the canal construction is the Fremont Ave. bridge, 242 feet long, between trunnions, and operated by four 100-horsepower Westinghouse motors.

European Canals. Throughout Europe, the question of internal waterways during 1917 was indeed vital. With the overtaxing of railways and motor transport, relief was sought in the use of the canals, and in both Germany and France these waterways were used to their fullest capacity.

An extension of the French national canal system was being advocated, and ambitious plans were being put forward for new developments. From the early eighties of the nineteenth century down to 1917, there had been a normal increase in the use of the canals for general commerce, but this was confined to the main water lines where there was a minimum depth of water of 2 metres (6 feet 6 inches) and where the locks were 38.50 metres (126 feet) in total length, with a width of 5.20 metres (17 feet). By 1917, the main water lines had a total developed length of some 6000 kilometres (3700 miles), and they have carried 97 per cent of the total canal commerce of the country.

On the other hand, the smaller waterways had a total developed length of about 5300 kilometres (3280 miles) and were used principally for local traffic. On a few of the canal rivers such as the Seine, the Havre-Tancarville, the Saône, Rhône, and Garonne, there were a few steam-driven cargo boats, but in the great majority of cases, the traffic was carried by small boats operated by the owners themselves.

It was proposed in 1917 to employ electric traction more extensively, but usually where this has been essayed, the attempt has been unsuccessful. Even for the transport of coal to Paris from the north, 75 per cent goes by rail and the remainder which was being carried in three-ton barges was greatly suffering from the decrease. Nevertheless, in many cases new and extended canals were being advocated.

Rhône Canal. In June, a conference was held in Lyons composed of representatives of 11 departments of France in reference to the navigation of the river Rhône, and the proposed canal in connection therewith, using electricity as a motive power. This conference recommended that the new canal be commenced without waiting for the end of the war, and also that in the development of water power of the upper Rhône sufficient current should be reserved to furnish power for the navigation of the Rhône and the canal. The project discussed also comprised the irrigation of land between Lyons and Marseilles. It was an interesting fact that this project was a portion of the great canal improvement prepared as far back as 1878 by M. de Freycinet.

The Canal du Nord. The Canal du Nord in 1917 was so overburdened with war traffic that it could carry no more, but this was the case before the war with the water route from Paris to the Lille district. This canal was the best of the French waterways and was 70 ft. wide and 8 ft. deep, having 19 locks with an average lift of 20 ft. The Canal du Nord when completed would have cost nearly £3,000,000 ($14,580,000) and provisions were made in the scheme of improvement for electric towage.

British Canals. The canal question in Great Britain during the year 1917, as elsewhere, attracted attention. The Canal Control Committee thought the canals should be used to relieve the railways and steps were being taken to provide additional crews for the canal boats. On some of the canals, however, the decrease in tonnage continued and it was universally recognized that the British canals were in far less efficient shape than those on the continent of Europe. This was in part due to neglect of the proper maintenance of the canals, but more to natural difficulties, as but 1482 miles out of a total of 4053 miles of navigable inland waterways in Great Britain were of natural river, whereas in France out of a total of 7006 miles 4392 miles were natural, and in Germany out of 7038 miles, 5815 miles were natural. Any improvement of the British canals would involve not merely canalization of rivers, but actual excavation, and at the same time, owing to the configuration of the country, there would be considerable construction of locks. Consequently, while some authorities advocated canal improvement, there were a number of engineers who believed that Government funds rather should be spent on the improvement of railways and roads, so that the latter might be able to take care of the increased motor truck traffic.

Mid-Scotland Canal. In Great Britain, two Mid-Scotland Ship Canal schemes were under consideration during the year and a Government committee had under investigation the question as to which route would be the more feasible. One route proposed was by way of Loch Lomond, while plans were in course of preparation for an alternative project by Bonny and Kelvin. The need for a waterway connecting the Clyde and the Forth was first proposed by Daniel Defoe in 1724, and various engineers subsequent to that time suggested such a connection. In the meantime a small barge canal was built which in its early days was a very successful enterprise. In 1890, it was proposed to parallel this barge canal along the Kelvin Valley by a ship canal and various plans were put forward for such a project. This was known as the "Direct Route," and just before the war the estimated cost for such a canal was calculated at about £24,000,000. This "Direct Route" from Grangemouth to Clydebank involved a distance of 30.5 miles.

The Loch Lomond Route started from the Forth just north of Grangemouth and utilized the valley of the river as well as the open water in Loch Lomond and Loch Long, so that there would be 30 miles in canal and 21 miles in the two lakes, making a total distance from Grangemouth to Clydebank of 65.5 miles. The "Direct Route" would be practically at sea-level, but in the case of the Loch Lomond Route, a height of about 20 feet above high water in the Clyde would have to be surmounted, and locks built for that purpose. The level of the Loch Lomond Route would be about 31 feet above low water in the Forth. Both plans were under consideration by the Admiralty and other departments of the Government in 1917, and were considered projects for the future rather than for immediate decision.

CANARY ISLANDS. A group of islands off the northwest coast of Africa, constituting a province of Spain. Area, 7273 square kilometres (2808 square miles). The census of December 31, 1910, returned a population of 444,016; estimate of December 31, 1913, 469,768. The capital, Santa Cruz de Tenerife, had 63,004 inhabitants in 1910; Las Palmas, the most important town, had 60,338. Potatoes, bananas, onions, tomatoes, and nuts are exported. The values of Canary Island crops in 1916 were estimated by the Agricultural Society as follows, in thousands of dollars:

Crop	*1915*	*1916*
Bananas	2,821	2,765
Tomatoes	450	415
Potatoes	347	421
Wheat	418	624
Corn	60	111
Onion seed and onions	103	164
Hides (kid skins)	40	65
Almonds	21	29
Cochineal	18	25
Total	4,282	4,622

Total imports 1916, $11.598.567; 1915, $14,650,326. Exports 1915, $3,306,441. The effect of the war was felt severely in the decrease of ocean tonnage, all but neutral vessels being withdrawn from the ports at the close of 1916.

CANCER. The Bureau of the U. S. Census issued in 1917 a monograph compiling and analyzing, under twenty-nine separate headings, deaths from cancer in the registration area of the United States in 1914. The total number of deaths in that area for that year, from cancer and other malignant tumors, was 52,420, the estimated population of this area being 66.8 per cent of the total population. As a result of investigation of reports as originally made to the bureau, the diagnosis of cancer was determined to be reasonably certain in 30,555 instances, or 58.3 per cent of the total; in 14,404, or 14.2 per cent, the diagnosis was classified as unknown. It is on this basis that the analysis of the cases was made. The increase in cancer in the United States was indicated by the mortality figures taken from the registration area as it existed in the several years mentioned, as follows: 1906, 29,020, a rate of 69.1 per hundred thousand of population; 1907, 30,514, rate 70.9; 1908, 33,465, a rate of 71.5; 1909, 37,562, a rate of 73.8; 1910, 41,039, a rate of 76.2; 1911, 44,024, a rate of 74.3; 1912, 46,531, a rate of 77.0; 1913, 49,928, a rate of 78.9; 1914, 52,420, a rate of 79.4. Of the deaths in 1914, it was said that 19,889, or 37.9 per cent, were due to cancer of the stomach and liver, and 8152, or 15.6 per cent, to cancer and other malignant tumors of the female genital organs.

CANDIA. See Crete.

CANNING (of Fruits and Vegetables). See Horticulture.

CANTONMENTS. See City Planning; Garbage and Refuse Disposal; Military Progress; Sewerage and Sewage Treatment; Water Works and Water Purification.

CAPE COLONY. See Cape of Good Hope Province.

CAPE OF GOOD HOPE PROVINCE. One of the four original provinces of the Union of South Africa. Population according to the census of 1911, 2,564,965, of whom 582,377 were whites. In 1911 Capetown, the capital, had, with suburbs, 161,579 (85,442 whites); Capetown municipality had 67,159 (29,863 whites). Kimberley and Beaconsfield, 44,433 (17,507 whites); Kimberley municipality, 29,525 (13,598); Beaconsfield municipality, 14,294 (3404); Kenilworth, 614; Port Elizabeth, 30,688; with suburbs, 37,063 (20,007 whites); East London, 20,867; with suburbs, 24,606 (14,899 whites); Grahamtown, 13,830; Paarl, 11,018; Simonstown, 4751; Vryburg, 2461; Mafeking, 2296. Of the total population, Europeans form about one-quarter and the colored races three-quarters; one-fifth of the population is urban. Christians numbered 1,437,688, most of whom were Protestants; Roman Catholics, 35,934; Mohammedans, 24,189; Jews, 16,744. Returned as of no religion were 1,077,998, of whom 1,047,233 were natives. Of the total population, 1,735,491 (859,716 males) were unable to read or write. For area, production, and trade, see South Africa, Union of.

CAPE-TO-CAIRO RAILWAY. See Congo, Belgian.

CAPE VERDE ISLANDS. A group of Portuguese West African islands, having a total area of 1516 square miles. Population (1912), 143,929. Imports and exports (1914), 2,023,653 and 295,768 escudos respectively. Capital, Praia.

CAPRONI, Gianni, inventor of the Caproni airplane. See Aëronautics.

CAPRONI BIPLANE. See Aëronautics; Military Progress.

CARAMEL. See Chemistry.

CARDINALS. See Roman Catholic Church.

CARINTHIA. A crownland and titular dukedom of Austria. To the west is Tirol, to the east Styria; to the north Salzburg and Styria, to the south Venetia, Görz, and Carniola. The area is 3987 square miles, or about twice that of Delaware. Population December 31, 1910, 396,200, as compared with 367,324 in 1900; the estimated population in 1913 was 406,162. In 1910 the number of Austrian subjects was 387,072; of these, German was the vernacular of 304,287 (78.61 per cent); Slovenian, 82,212 (21.24 per cent). Catholics in 1910 numbered 371,333 (93.72 per cent); Evangelicals, 24,299 (6.13 per cent). Of the population in 1910, those dependent on agriculture (including forestry) constituted about 51 per cent; industry and the trades, 21.7 per cent; commerce and transportation, 11 per cent; public and military service and without vocation, 16.2 per cent. Carinthia has a remarkably high rate of illegitimacy; in 1912, out of a total of 12,846 births, 4735 were illegitimate. The capital is Klagenfurt, which in 1910 had 28,911 inhabitants. Carinthia has a unicameral diet of 43 members; it is represented in the lower house of the Austrian Reichsrat by 10 members.

CARLISLE INDIAN SCHOOL. See INDIAN TRAINING AND INDUSTRIAL SCHOOL.

CARLSTROM, VICTOR. An American aviator, killed May 9, 1917, at Newport News, Va., when an aëroplane that he was piloting collapsed and fell 3500 feet. Carlstrom was born in 1890 in Sweden, and for a time was a cowboy on a Colorado ranch. A week after he took up aviation he was appointed an instructor, and at the time of his death he was teaching an army student of the Atlantic Coast Aëronautical School. Shortly before, he had been commissioned a lieutenant in the United States Flying Corps Reserve. He received his license as an aviator from the Aëro Club of America in 1912. Carlstrom was known as a skillful and also as a careful aviator. He had been in the public eye since November, 1915, when he flew from Toronto to New York, 600 miles, ascending at times to nearly 8000 feet and traveling on an average of 90 miles an hour. On April 19, 1916, he established an American record by ascending to 11,180 feet with two passengers, and another on April 30, when, with one passenger, he went up to 16,225 feet. A third record was his non-stop flight of 661 miles from Newport News to Sheepshead Bay, N. Y., with one passenger. One of his notable exploits was his flight from Chicago to New York, made on November 2 and 3, 1916. He failed to do this without stopping twice, but he covered the 967 miles in 8 hours, 28½ minutes, and made a new cross-country record, shortly afterward beaten by Miss Ruth Law, although Miss Law's total time between Chicago and New York was slightly the larger. His last 315 miles was covered at an average of 134 miles an hour. For this flight the Aëro Club of America presented to Carlstrom a gold watch, and he also received, in the same year, the club's medal of merit and the Curtiss marine flying trophy.

CARMAN, ALBERT. A Canadian Methodist clergyman, educator, and adminstrator, died at Toronto, Ont., November 3, 1917. He was born in Iroquois, Ont., was educated at the Dundas Grammar School and Victoria University, Cobourg, where he graduated in 1855. He was appointed professor of mathematics in Albert College, Belleville, in 1857 and the following year became principal of the college. Through his exertions the college was affiliated with Toronto University in 1860, received a university charter in arts in 1866, and in 1868 was created Albert University, with a charter in all the faculties, Carmon becoming its first chancellor. He was ordained a minister of the Methodist Episcopal Church in Canada in 1859, and was its Bishop in 1874-83. For some time previous to the latter year the organic union of the various Methodist denominations in Canada had been discussed, and after it had been accomplished in 1883, and the united body given the name of the Methodist Church, Carman became General Superintendent, an office which he held until 1914, after which he held the rank of Emeritus General Superintendent. In 1906 he made a tour of the world in the interest of missions. He was prominently identified with the founding of Alma Ladies' College, St. Thomas, Ont., and was appointed a senator of Toronto and Victoria universities and a governor of the Wesleyan Theological College, Montreal. Throughout his long career he was a consistent and uncompromising advocate of prohibition of the liquor traffic. He was considered the ablest administrator of the Canadian Methodist Church.

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE. See INTERNATIONAL PEACE AND ARBITRATION.

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING. See UNIVERSITIES AND COLLEGES.

CARNEGIE INSTITUTE OF TECHNOLOGY. A non-sectarian institution of learning, devoted primarily to the study of the natural sciences, situated at Pittsburgh, Pa. In the fall of 1917 there were 3159 students and 236 members of the faculty. Volumes in the adjacent Carnegie library, to which the members of the institute have access, numbered 350,000. Productive funds in 1917 amounted to $9,500,000 and expenditures for the year 1916-17 to $753,137. The institute was founded in 1909 by Andrew Carnegie. Beginning on July 1, 1918, the schedule will be conducted on a four-quarter year plan, as a war measure and to accelerate work. President, Arthur A. Hammerschlag, Sc.D., LL.D.

CARNEGIE INSTITUTION OF WASHINGTON. The sixteenth annual report of the president of the institution, Robert S. Woodward, covered the fiscal year ending October 31, 1917. It considered in a general way the work of the various departments and discussed the noteworthy events of the institution during the year, the relations between the institution and the public, the researches during 1917, the financial record, and the publications. One of the trustees, Isaac Wayne MacVeagh, died in Washington, January 11, 1917. As a trustee he rendered valuable service by discouraging an unwarranted optimism concerning the work of the institution, while at the same time giving valuable counsel, especially with regard to the legal and moral aspects of the proceedings of the Board of Trustees and of the Executive Committee.

During 1917 a new and probably final edition of the *Catalogue of Stars* by Ulugh Beg, the Arabian astronomer of the fifteenth century and the grandson of Tamerlane, was published. This work, second in importance only to the *Almagest* of Ptolemy, an edition of which was published in 1916 by the institution, was, like the *Almagest*, edited by Edward Ball Knobel, treasurer and past president of the Royal Astronomical Society of London. There was also issued a *Concordance to the Poems of John Keats*, compiled by six editors assisted by twenty-four collaborators. The publication of the third volume of the *Researches of the Department of Terrestrial Magnetism*, taken in connection with the two previous volumes in the series, brings down to near the end of 1916 the results of the magnetic survey of the earth carried on by the department during the past ten years. The results were of great value and were immediately available as aids to navigation at a time when few data could be obtained from other sources. At the meeting of the Board of Trustees in December, 1916, the project of publication of the series of *Classics of International Law* was ordered to be transferred, together with the published volumes of the series on hand, to the Carnegie Endowment for International Peace; and the transfer was completed in 1917. The department of economics and sociology was discontinued by resolution of the trustees at their meeting of December, 1916. Three of the divisions of the department, however, had completed their reports, which were published during the last two years under the title *Contributions to American Economic History*.

Concerning the relations between the institution and the public, the report sets forth that the administrative office has had difficulty in dealing with the claims of the humanists, which were often conflicting, to a larger share of encouragement and support than could be given them; and also with the claims of those who, whether humanists or scientists, represent aberrant types of mind and as such lack the critical capacity to discern the limitations of the institution in granting aid, or mistake their own projects and suggestions for facts meriting scientific approval. The researches of the year proceeded without essential modification or limitations. There was an increasing public demand for the knowledge developed in the research departments and also for the men and methods essential to its production. As a result the institution has lost during the year some of its ablest men, who have joined commercial, educational, or other organizations. The activities of the division of research associates in 1917 were no less successful than those of the research departments.

The financial statement shows total receipts for the fiscal year amounting to $1,425,594 and total appropriations of $1,410,464. The grand total receipts to 1917 inclusive are $14,433,327 and the appropriations $13,973,614. During 1917 the Executive Committee authorized the publication of 25 volumes at an estimated cost of $65,029. During the year 21 volumes were issued and 27 additional volumes were in press at the time the report was issued. Since the institution was founded there have been distributed by gifts to libraries and authors, and by sales, 165,888 volumes.

CARNIOLA. A crownland and titular dukedom of Austria. It is bounded on the north by Carinthia and Styria; on the east by Styria and Croatia; on the south by Croatia and Istria; on the west by Görz and Gradisca. Area, 3842 square miles. Population, according to the census of December 31, 1910, 525,995, as compared with 508,150 in 1900; the estimated population in 1913 was 530,189. In 1910 the number of Austrian subjects was 520,327; of these, Slovenian was the vernacular of 490,978 (94.36 per cent); German, 27,915 (5.37 per cent). Catholics in 1910 numbered 524,846 (99.78 per cent). Of the population in 1910, those dependent on agriculture (including forestry) constituted about 61.9 per cent; industry and the trades, 17.5 per cent; commerce and transportation, 7.5 per cent; public and military service and without vocation, 13.0 per cent. The capital is Laibach, with 41,727 inhabitants in 1910. Carniola has a unicameral diet of 50 members and is represented in the Austrian Reichsrat by 12 members.

CAROLINE ISLANDS. See GERMAN NEW GUINEA.

CAROLUS-DURAN, EMILE AUGUSTE. A French painter and teacher, died in Paris, February 18, 1917. He was born July 4, 1838, in Lille, and his name was originally Charles Emile Auguste Durand. His parents were humble folk, but he was enabled to study in Lille under Souchon and later to go to Paris. There, in 1861, he won the Wicar prize, which made it possible for him to travel in Italy and continue his studies of the masters. He first attracted attention by two pictures, which were the fruit of his Roman sojourn—"The Evening Prayer" and "The Victim of Assassination." The latter, one of his best works, was exhibited at the Salon of 1866 and was bought for 5000 francs for the Museum of Lille. On the wings of this success he went to Spain, where he was greatly influenced by Velazquez, whose ardent disciple he became. Carolus-Duran's "Lady with Glove," a portrait of his wife, is one which made him famous and which he never surpassed. Another early work that attracted much notice was his equestrian portrait of his wife's sister, the actress Croizette. After this, he had as sitters such notable personages as Gustave Doré, Gounod, Pasteur, Emile de Girardin, Henner, Paul Déroulède, Cardinal Matthieu, Queen Maria Pia of Portugal, Mme. de Pourtalès, Countess de Vandal, Princess de Wagram, Countess of Warwick, and Duchess of Marlborough, and in the United States, which he visited a number of times, Mrs. William Astor, Mrs. John Astor, and other society women. He had extraordinary skill in the handling of fabrics and accessories, but has been criticized for failing to penetrate to and reveal the character of his sitters. His success as a portraitist rather overshadowed his other work, but he covered a wide range of religious, historical, decorative, and landscape subjects. One of his most notable works is his mural painting, "Gloria Mariæ Medici," on a ceiling in the Louvre. This contrasts sharply with his illustrations of events in the life of Christ. Other titles to be noted are: "A Future Doge," "The Triumph of Bacchus," and "Andromeda." From the atelier which Carolus-Duran opened in 1873 some of his pupils went out to be famous. John S. Sargent stands at the head, with Carroll Beckwith, Alexander and Birge Harrison, and Will H. Low among the other Americans who studied under him. He was a grand officer of the Legion of Honor, member of the Academy of Beaux-Arts, honorary president of the Society of Beaux-Arts, and from 1904 to 1913 director of the French Academy in Rome. He received numerous salon medals, including the medal of honor in 1879, and was decorated with various foreign orders.

Under the name "Charles Durand" he also wrote novels and short stories, and he was known as an expert boxer, fencer, and horseman, and for his many duels.

CARRENO, Teresa. A celebrated pianist, died in New York City June 12, 1917. She was of Venezuelan nationality, born at Caracas in 1853. Gen. Bolivar was her uncle. Her father, Manuel Antonio Carreño, sometime Minister of Finance, was a talented amateur musician, and from him the daughter received her first instruction as a small child. She was only nine years old when she made her first appearance in New York at a benefit concert in the Academy of Music. She studied in New York with Louis Gottschalk and later in Paris with Georges Mathias. She was also a pupil of Rubinstein. In early life, she began a career in opera, singing in *Les Huguenots* under Mapleson's management and in 1875 in Maurice Strakosch's company with Brignoli and Tagliapietra. Her versatility did not end here, for she even conducted an opera troupe herself once in Venezuela, and she composed a string quartet, works for piano, and the Venezuelan national anthem. But her great reputation was made as a pianist. On two continents she was hailed as the greatest of woman artists at her instrument. She continued to tour in concert and to play with famous orchestras in the great cities until a few months before her death. She was especially famous for the great physical power at her command, which invested her playing with a brilliancy and force seldom attained by women pianists. She had often been called the "Valkyr of the piano." Mme. Carreño was four times married and thrice divorced. Her first husband was Emile Sauret, violinist, her second, Giovanni Tagliapietra, a singer, her third Eugen d'Albert, pianist and composer, and her fourth Arturo Tagliapietra, younger brother of Giovanni. Her most famous pupil was the American composer Edward MacDowell. Mme. Carreño, although she considered herself an American, had resided principally abroad, where she left five children. After the war her ashes were to be sent to Berlin for burial.

CARS. See Railways.

CARSE, Matilda Bradley. An American temperance leader, died at Park Hill-on-Hudson June 3, 1917. She was born in 1835 at Saintfield, near Belfast, Ireland, in 1835, but after 1858 lived mostly in Chicago. Thomas Carse, her husband, died in 1870. With Frances E. Willard and Lady Henry Somerset, Mrs. Carse helped to found the Woman's Christian Temperance Union and she was the founder and president of the Woman's Temperance Publishing Company. Of the Chicago Central Woman's Christian Temperance Union she was president for nearly forty years. She was long prominent in Chicago civic life and charities, and especially on behalf of women. Through her efforts the first police matron in the city was provided for. Mrs. Carse was the first woman member of the Board of Education, was a lady manager of the World's Fair in 1893, and gave much attention to the suffrage cause. The Woman's Temple of Chicago was founded by her, and the Woman's Club numbered her among its charter members. For four years before her death she lived near New York.

CARSON, Sir Edward. See Great Britain, *History*.

CARY, Edward. An American editorial writer, died in Brooklyn, N. Y., May 23, 1917. He was born in 1840 in Albany, N. Y., and graduated from Union College in 1863. From that year till 1870 he was editor of the Brooklyn *Union*, and from 1871 till his death, nearly 46 years later, an editorial writer on the New York *Times*. To this newspaper he contributed many of the articles that helped to make it famous, from the earliest attacks on the Tweed Ring to his most recent comment on public affairs. He was an ardent and early champion of civil service reform, being an associate of Carl Schurz, George William Curtis, and Henry Ward Beecher in this movement. He was a leading advocate of independence in political thinking, and was especially effective when working to advance some civic or humanitarian cause or to expose and condemn corruption or fallacy. The downfall of the free silver movement must be attributed in no small measure to his persistent attacks upon it. His writing was quite largely on either political or financial subjects. Mr. Cary contributed to the "American Men of Letters Series" a *Life of George William Curtis*. This was his only book, but the *Times* estimated that he had written for it at least an average of 6000 words weekly throughout his long connection with the paper, so that his collected articles would fill many volumes. Consult the New York *Times*, May 24, 1917.

CASE SCHOOL OF APPLIED SCIENCE. A non-sectarian institution of learning at Cleveland, O. In the fall of 1917 there were 456 students and 55 members of the faculty, including those absent in war service. Volumes in the library numbered 13,505. Productive funds in 1917 amounted to $2,485,144 and the income therefrom and from fees, from September 1, 1916, to August 31, 1917, amounted to $200,633. Case School was founded in 1881. President, Charles Sumner Howe, Ph.D.

CASPARI, Charles, Jr. An American pharmacist and author, died October 13, 1917, at Baltimore. He was born at Baltimore May 31, 1850, and was educated at the University of Maryland and the Maryland College of Pharmacy. He was appointed professor of pharmacy in the latter institution in 1879, and was dean of the faculty from 1902 until his death. He was general secretary of the American Pharmaceutical Association in 1894-1911, and was appointed State food and drug commissioner of Maryland in 1910. In 1905 he became pharmaceutical editor of the *National Standard Dispensatory*. He published *A Treatise on Pharmacy* (1895; 5th ed., 1916), a work which came to be known throughout the United States and Europe as "Caspari's Treatise." Caspari was the dean of the pharmaceutical profession in the United States.

CATHOLIC CHURCH. See Roman Catholic Church.

CATHOLIC UNIVERSITY OF AMERICA. The national university in America of the Roman Catholic Church, at Washington, D. C. In the fall of 1917 there were 1655 students and 83 members of the faculty. Volumes in the library numbered 130,000. Productive funds in 1917 amounted to about $1,850,000 and income to about $215,000. The University was founded in 1887. President, Rt. Rev. Thomas Joseph Shahan, D.D.

CATOPRITE. See Mineralogy.

CATSKILL AQUEDUCT. See Aqueducts.

CATTLE. See Dairying; Stock Raising; Veterinary Medicine.

CATTLE TICK. See Veterinary Medicine.

CAUCASUS. A division of Russia, on both sides of the Caucasus Mountains. It extends from the Black Sea to the Caspian Sea and is bounded by Turkey and Persia on the south. The area is stated at 181,173 square miles, about equal to Idaho and Wyoming; population, as estimated for January 1, 1915, 13,229,100. Included in the Caucasus are seven governments, five provinces, and two districts. These are divided into two parts, Ciscaucasia and Transcaucasia. Ciscaucasia is the portion lying north of the Caucasus Mountains (except Dagestan and part of Baku) and includes the government of Stavropol and the provinces of Kuban and Terek. Combined area of Stavropol, Kuban, and Terek, 85,767 square miles; population, 5,719,600. Transcaucasia is the portion south of the Caucasus Mountains (but including Dagestan and the northern part of Baku); it consists of the governments of Baku, the Black Sea, Elizavetpol, Erivan, Kutais, and Tiflis, the provinces of Batum and Kars, and the districts of Sukhum and Zakataly. Area, 95,406 square miles; population, 7,509,500.

Caucasia (that is, the Caucasus), from which is named the Caucasian, or white, race of man, is remarkable for groups of tribes having mostly a strong and handsome physique and speaking divers agglutinative languages. The chief of these peoples are the Circassians, Kartvelians, Chechens, and Lezghians. The Circassians include the Cherkess, or Circassians proper (whose language is not known to be related to any other family), the Abkhasians, and the Kabardians. The Kartvelians include the Georgians (language not related to any other family), the Imeritians, the Mingrelians, the Lazes, and the Svanetians. The Chechens are probably related to the Lezghians, but constitute a distinct linguistic family.

Chief cities of the Caucasus, with estimated populations prior to the great war: Tiflis, 327,800; Baku, 237,000; Salyany, 120,900; Ekaterinodar, 107,400; Vladikavkaz, 79,300; Novorossiysk, 66,700; Stavropol, 64,700; Elizavetpol, 63,400; Kutais, 53,900; Maikop, 52,600; Eysk (Yeisk), 51,800; Alexandropol, 48,900; Armavir, 47,000; Batum, 46,000; Shusha, 42,700; Nukha, 41,800. See War of the Nations.

C. C. N. Y. See New York, College of the City of.

CELEBRATIONS. On October 26 the bicentenary of the founding of New Orleans was celebrated both in the United States and France. There were no other celebrations of general or historical character during the year that call for special mention at this place. Elsewhere in this Year Book will be found an account of the exercises that attended the opening in October of the new Catskill Aqueduct from which New York City derived its increased water supply. See Aqueducts.

CEMENT. The production of Portland cement, which represents the bulk of the mined production in 1917, broke the record. There were produced approximately 93,554,000 barrels, an excess over the preceding record production, that of 1913, of nearly 1,500,000 barrels, and over the production of 1916 of more than 2,000,000, or 2.2 per cent. The shipments in 1917 amounted to about 90,630,000 barrels. These fell below the shipments of 1916 by nearly 4,000,000 barrels or about 4 per cent.

Throughout the United States during the year, higher prices prevailed than in the previous year, except at a few plants at the Pacific Coast. These higher prices were, however, accompanied by higher cost of manufacture. The demand for cement was very good during the first eight months, but showed a falling off during the remainder of the year as a result of unsatisfactory conditions of labor and traffic.

CENTRAL AMERICA. The republics of Guatemala, Honduras, Salvador, Nicaragua, and Costa Rica and the colony of British Honduras. Usage varies with respect to "Central America," some writers including Panama therein and some regarding it as covering the territory between the Isthmus of Panama and the Isthmus of Tehuantepec. See articles on the countries named above.

CEYLON. A British island in the Indian Ocean off the southern extremity of Hindustan, lying between 5° 55′ and 9° 51′ N. lat. and 79° 41′ and 80° 54′ E. long. Its extreme length from north to south, i.e., from Point Palmyra to Dondra Head, is 266 miles; its greatest width 140½ miles, from Colombo on the west coast to Sangemankande on the east. Its area is 25,332 square miles. The Máldive Archipelago, 400 miles west of Ceylon, made up of 17 groups of islets, which is sparsely inhabited by a mixed race of probably Aryan original stock, is tributary to Ceylon. The islands are covered with coconut palms and yield millet, fruit, and coconut produce. Communication is mainly by native craft with India and Ceylon. The population is estimated at 72,237; the people are traders and seamen. Plantation laborers number about 510,000 (in large part Indian coolies). Acreage in 1915 under coconuts, 980,000; rice, 785,000; other grains, 131,000; tea, 427,000; rubber, 200,000; cinnamon, 45,000; cacao, 41,500. In 1915 the exports of tea were 215 million lbs., of which 124 million lbs. were sent to the United Kingdom. The exports of desiccated coconuts were 349,009 cwts., copra, 1,208,529 cwts., and coconut oil, 501,510 cwts. In the same year, 48,803,816 lbs. of rubber were exported, of which 26,898,371 lbs. went to the United Kingdom, 19,383,095 lbs. to the United States, and 2,522,350 lbs. to other countries. Exports of rubber, 1916, 54,500,000 lbs.

Imports for 1915 are given at £11,229,735; exports, £18,225,145; revenue (1914-15), £3,436,365; expenditure, £3,571,868. Public debt Sept. 30, 1915, £5,750,862. Railways open at end of 1915, 693 miles. In 1917 the Ceylon Government Railway comprised a system of 706 miles, of which only 22 miles were double track. Over a large portion of this line the traffic was very heavy.

CHAILLÉ-LONG, Charles. An American soldier, explorer, diplomat, and writer, died at Virginia Beach, Va., March 24, 1917. He was born at Princess Anne, Md., in 1842. Shortly after leaving Washington Academy (Md.), he enlisted in a Maryland volunteer regiment and rose to be captain before the end of the Civil War. By 1869, as lieutenant colonel in the Egyptian army, he had become identified with that country where he long served with distinction. Up to 1873 he was chief successively of three sections of the general staff of the army, and then for three years was chief of staff to General "Chinese" Gordon, Governor General of the Egyptian Sudan. By the treaty which he negotiated with King M'Tesa, Uganda was annexed to Egypt in 1874, and in this same year passed over a hitherto unexplored part of the Victoria Nile and discovered Lake Ibrahim, thereby clearing up the mystery of the river's source. For this service he received, 36 years later, a gold medal from the American Geographical Society. In 1874, also, he was wounded, and cited in general orders, was decorated with the cross of the Medjidie for expeditions to Niam-Niam and the East Coast of Africa, and was promoted colonel and bey. Three years later he retired. This, however, was not the end of excitement for Chaillé-Long, for in 1882, when Alexandria was bombarded by the British, he stepped in to be acting consul for the United States and gave protection to thousands of refugees of all nationalities. The cross of Osmanie was his reward. For two years (1887-89) he was secretary of legation and consul general of the United States in Korea, and he was prominent in the Postal Congress of 1897 and in the special commission to the Paris Exposition in 1900. After some of his earlier adventures he had returned to the United States to study law at Columbia University, with the class of 1880. In France, where he lived for some years, he was made chevalier of the Legion of Honor, honorary member of the Institut Egyptien, and member of several geographical societies. In later life he made Washington his home. Beside long contributions to learned publications, Col. Chaillé-Long wrote books that are valuable records of exploration and ethnological study: *Central Africa* (1876), translated into French; *The Three Prophets: Chinese Gordon, Mohammed-Akhmed, Arabi Pasha* (1884); *My Life in Four Continents* (1912).

CHAMBERLAIN, ROBERT N. An American jurist, died September 20, 1917, at Boston, Mass. He was born in 1860, was appointed associate justice of the Supreme Court of New Hampshire in 1904, and in 1917 became Chief Justice in succession to Chief Justice Robert G. Pike, who died in January of that year.

CHANDLER, WILLIAM EATON. An American politician, died November 30, 1917, at Concord, N. H. He was born in Concord, N. H., December 28, 1835, and graduated at the Harvard Law School in 1854, the late Joseph H. Choate being one of his classmates. Entering politics, he served three terms in the House of Representatives in his native State, and was Speaker of that body in 1863-64. In 1865 he was appointed by President Lincoln the first Solicitor and Judge Advocate General of the Navy Department. He was First Assistant Secretary of the Treasury under Secretary McCullough from 1865 to 1867, and Secretary of the Navy under President Arthur in 1882-85. During his term of office the building of the modern American navy was begun. Chandler was United States Senator from New Hampshire in 1887-1901, after which he was appointed president of the Spanish Treaty Claims Commission. He was a member of the New Hampshire Constitutional Convention in 1902. Chandler was one of the most ardent supporters of Lincoln and was one of the founders of the Republican Party.

CHARITIES. The year 1917 was unprecedented in American history for the extent of charitable and philanthropic activities. While there were no single large endowments comparable to some of those of the recent past the universal support of the activities of the Red Cross (q.v.), Y. M. C. A. (q.v.), the relief of special calamities by national or local appeal, such as in the case of the Halifax disaster in December, and the generous support of local charities gave to the philanthropic activities of the year a breadth and depth of social interest previously unknown. The Rockefeller Foundation (see ROCKEFELLER PHILANTHROPIC BOARDS) carried on its extensive activities throughout the world. Perhaps, however, the most important feature of the year was the manifestation of world charity through the activities of the Y. M. C. A. and the continuance and development of numerous funds serving different classes of those made needy by the European war as described under RELIEF FOR WAR VICTIMS. While the year was one of unusual industrial prosperity with the consequence that unemployment (q.v.) which is a chief cause of dependency and delinquency was reduced to a minimum, nevertheless the sharp advances in the cost of living (see PRICES) more than offset advances in wages and the benefits of continuous employment. The conferences noted below were only a few among many. There were in addition conferences of those interested in special classes, as the blind or tubercular, and State conferences of a comprehensive sort in many States. In addition to the matter below see JUVENILE COURTS; MINIMUM WAGE; OCCUPATIONAL DISEASES; OLD AGE PENSIONS; PENSIONS FOR MOTHERS; PENOLOGY; PROSTITUTION; WOMEN IN INDUSTRY; and WORKMEN'S COMPENSATION.

NATIONAL CONFERENCE OF CHARITIES AND CORRECTIONS. This conference held its 44th annual meeting at Pittsburgh, June 6-12, with 4300 persons registered as attending. The tendency toward the coördination of charitable and philanthropic activities is indicated by the fact that in conjunction with this conference were held sessions of the following organizations: National Conference on the Education of Truant, Backward, Dependent, and Delinquent Children, June 4-6; American Association of Officials of Charities and Corrections, June 8; American Committee of Polish Social Workers, June 9-11; National Federation of Settlements, June 3-6; National Association of Jewish Social Workers, June 3-6; International Association of Policewomen, June 6-8; National Children's Home Society, June 4-6; National Probation Association, June 5-6.

This same tendency toward coöperation and unification was indicated by the agitation during the last three years for a change in the name and scope of the National Conference resulting in its reorganization in 1917. While there were a considerable number who favored the old name and many also who favored such names as National Conference on Social Welfare, or National Conference on Public Welfare, or National Conference on Social Service, a much larger number favored National Conference of Social Workers. The latter was finally adopted by acclamation as the new name for the conference. At the same time a Committee on Kindred Groups under the chairmanship of Roger N. Baldwin succeeded in bringing about a complete reorganization of the conference. The following seven divisions were created to be continuous from year to year: the family, children, health, delinquency and correction, public agencies and institutions, industrial and economic conditions, and the local community. Special divisions may be created for a year at a time. As stated in *The Survey* (June 16) special action with reference to the affiliations of other organizations interested in different aspects of social welfare was taken as follows: "Five will remain completely independent—American Association of Societies for Organizing Charity, National Conference of Jewish Charities, National Conference of Jewish Social Workers, National Conference on the Education of Truant, Backward, Dependent, and Delinquent Children, Secretaries of Social Service Exchanges; nine will retain independent existence but will unite their programmes with the national conference—National Children's Home Society, National League on Urban Conditions among Negroes, National Housing Association, American Social Hygiene Association, National Association for the Study and Prevention of Tuberculosis, National Probation Association, International Association of Policewomen, Hospital Social Service Workers, Polish Social Workers; eight will become integral parts of the national conference—Teachers of Practical Sociology, Industrial Social Service Group, Group of Charities Endorsement, Charities Federation and Central Councils of Social Agencies, Officials of Charities and Corrections, Presidents and Secretaries of State Conferences, Land Taxation Group, Special Committee on Radical Social Movements."

The general subject of the 1917 conference as indicated by the address of the president, Frederick Almy of Buffalo, was "The Abolition of Poverty." In his address the president indicated in an optimistic manner the progress during recent centuries in the reduction of poverty, the improvement of health, the reduction of illiteracy and crime and the spread of welfare among a larger and larger proportion of the population.

In the section on the family and the community a special address was given by Helen R. Y. Reid of Montreal on "The Patriotic Fund of Canada." This section also considered the treatment of soldiers' families. The section on health gave attention to public health in war time and special public health nursing problems created by the war. In the section on Community Problems, Professor Irving Fisher of Yale and Rev. Charles Stelzle discussed national prohibition; and Professor Graham Lusk and Lucy H. Gillette discussed economy in diet and food values. There were numerous other special addresses on the programme as originally arranged and carried out.

The declaration of war, however, resulted in the creation of a special section on Social Problems of the War with Edward T. Devine as chairman. The addresses here proved the overshadowing interest of the conference. The chairman indicated that the social problems due to war are in reality an intensification of every social problem of peace. Thus the injured and blinded increase; mortality, especially infant, is magnified; epidemics break out; venereal disease overruns armies and training camps; sexual immorality spreads; numerous illegitimate children are born; prostitutes increase; under-nourishment and exposure produce insanity, crime, lawlessness, and physical and mental deterioration; education is neglected; children and women are drawn into industry in greater numbers and for longer hours; standards of living are lowered by excessive prices; and family ties are relaxed. Much attention was given to problems of relief connected with the soldier and his family. The majority opinion favored the government's action in paying ample wages and providing insurance of soldiers and sailors against accident and death. (See section under INSURANCE.) There was unanimous approval of national prohibition during the war and for one year thereafter. There was unanimous opposition to the lowering of the standards of labor legislation. Mrs. Florence Kelley said: "We believe that in war as in peace the heavy work should be done by men and that at night the mothers of little children should be at home." A resolution requested the Council of National Defense to appoint a commission for the conservation of social work. It was pointed out that because of increased taxes and higher costs of living there was great danger of a relaxation of social effort at the very time when special effort was needed. Delegates from Canada testified that during the war social and educational activities supported by public funds had been curtailed while that supported by private gifts had been kept near normal through the most strenuous exertion by social workers. Special attention was given to problems of infant welfare during the war, and to the protection of girls and the care of unmarried mothers. A much discussed paper was that by J. Prentice Murphy of Boston who demanded that unmarried mothers be treated as any other mothers; that they be not judged "immoral" nor herded in institutions. Special features of the programme were addresses by ex-President Taft on the "League to Enforce Peace"; by Morris Hillquit on the "Socialist Positions and Aims"; by Samuel Gompers on "The War and Labor"; by representatives of the American Red Cross and the Military Hospitals Committee of Canada; and by Herbert C. Hoover on "The War and Food."

Another significant feature was a resolution circulated unofficially and signed by 570 members, and afterwards transmitted to President Wilson which acclaimed the democratic purposes of the President's address to the Senate in January and his war message of April as well as the response thereto of liberal opinions in England and the ideals of the Russian revolution, and declared, "We pledge the administration our support in such steps as will elicit a fresh statement of peace terms by the allies, repudiating autocracy, disclaiming conquests and punitive indemnities and focusing the liberal forces of all mankind for a democratic organization of the world."

An official resolution of the conference created a special committee on social problems of the war; declared that while many members opposed all war, the majority supported the government in a war for liberty and democracy; and urged "the importance of maintaining the full force and efficiency of the agencies for social work from the destructive and demoralizing influences of war."

Mr. Robert A. Woods of Boston was chosen president of the 1918 conference which will meet at Kansas City. The following divisions for that conference were authorized and the chairman indicated appointed: Children, Henry W. Thurston, New York; Delinquents and Corrections, Jessie A. Hodder, Framingham, Mass.; Health, Dr. J. H. Landis, Cincinnati; Public Agencies and Institutions, Albert Sidney Johnstone, Columbia, S. C.; The Family, Gertrude Vaile, Denver; Industrial and Economic Problems, Florence Kelley, New York; The Local Community, Charles C. Cooper, Pittsburgh; Mental Hygiene, Dr. William Healy, Boston; Organization of Social Forces, Allen T. Burns, Cleveland; Social Problems of the War and Reconstruction, V. Everit Macy, New York.

The National Conference maintains headquarters at 315 Plymouth Court, Chicago. It issues a quarterly *Bulletin* and publishes the papers and discussions of the annual meeting in its *Proceedings*.

The National Federation of Settlement. This organization met at Pittsburgh June 3-6, in conjunction with the National Association of Music School Societies. Representatives were present from 94 organizations in 33 towns and cities in 17 States and Canadian provinces. A preliminary report was made of an investigation carried on jointly by 35 settlements comprising 350 workers. The inquiry covered 9900 girls of 13 nationalities. Returns to a questionnaire had been received from school teachers, nurses, mothers, court officials, charity workers, and settlement residents. A similar inquiry for the pre-adolescent boy was called for. There was discussion of the experiments of the New York Police Welfare Bureau in utilizing boys with wayward tendencies as junior police; and of the relations of moving pictures to the development of city youth. It was known that various settlement workers were strongly pacifist in their points of view and yet after extensive discussion resolutions were drawn pledging support to the government in the war. The resolution affirmed, however, "that to the greatest possible extent the rights of free assembly, free speech, a free press, and the freedom of conscience must be preserved." Graham Taylor was elected president for 1918.

The National Social Workers' Exchange. An office was opened by the new organization in August at 130 East 22d Street, New York City. The organizing committee was composed of Richard H. Edwards, Margaret F. Byington, James H. Cushman, and some dozen others chiefly from the former committee supervising the Social Work Department of the Intercollegiate Bureau of Occupations. The former manager of this Department was made the head of the new Exchange, and records were transferred. It was planned to have on file at the Exchange a complete registration of persons interested in and qualified for social work.

The American Association of Societies for Organizing Charity. The annual meeting took place in Pittsburgh in June. The chief topics were problems of family stability and rehabilitation as related to the war. Much attention was given in sections for general secretaries and for district visitors to problems of civilian relief. While it was generally agreed that such work should be under the special supervision of some such body as the Civilian Relief Committees of the Red Cross, yet the expert knowledge of the officers of associated charity organizations should be utilized. It was resolved to send a letter to each of the 166 member societies outlining relations of charity organization societies to Red Cross chapters in matters of civilian relief. Another resolution favored effort to prevent the relaxation of the restrictions imposed by labor laws. Still another favored national prohibition of the importation, manufacture or sale of intoxicants "at least for the period of the war." An additional field worker was authorized to strengthen the activities of the member societies in face of the unusual demands of war time.

The National Children's Home Society met at Pittsburgh, June 4-6. Representatives were present from twenty-six of the thirty-two constituent societies. Topics discussed included, "Juvenile Courts and Child Caring Agencies." "The Development of Rural Nursing," "The Relation of Child Caring Agencies to the Natural Family," and "Ways and Means of Preventing the Separation of Child and Family." It was decided to change the name to National Children's Home and Welfare Association so as to indicate the broadening scope of interest and activities. The next meeting will be at Kansas City with Mr. D. F. Shirk of Kansas as president.

The National Association of Jewish Social Workers met at Pittsburgh in June. Among the new lines of work indicated was that of the Field Bureau under Dr. Borris D. Bogen. This Bureau was charged with visiting different communities for the purpose of carrying on coöperative efforts and an educational campaign for higher standards. It also began the registration of Jewish transients in order to ascertain the extent of migration within the United States. In addition it formed the National Jewish Tuberculosis Commission. The conference appointed a committee to register social workers and to develop approved standards for Jewish charity and philanthropy. Other subjects discussed were Americanization and the Morals' Court.

The New York Federation of Jewish Philanthropic Societies carried on an eight weeks' campaign in December, 1916, resulting in pledges of over $2,000,000 for 1917. About eighty organizations were united in this effort; and the total sum realized was the largest ever pledged for a similar purpose in this country. Over 9000 persons made pledges, with the result that the guaranteed incomes of the federated societies were doubled.

Catholic Charities. A distinguishing feature of the development of Catholic charities in recent years is the tendency toward coördination along with an increasing effort to meet the special and newer problems of modern industrialism. Thus the National Federation of Catholic Societies recently formed has served to unify the aims and methods of related activities. Recent sessions of the national conference of Catholic charities have given special attention to problems of industry centring about the minimum wage and social insurance for wage earners. A tendency to make the parish a social as well as religious centre is manifested in efforts to increase the social uses of the parish house. Special attention has been directed also to problems of juvenile delinquency, mothers' pensions, and protection of girls. In January. 1917, appeared the first issue of *The Catholic Charities Monthly*. It is issued from the Catholic University at Washington with Prof. John A.

Ryan as editor. To give it a clear field the *St. Vincent de Paul Quarterly* suspended publication. *The Catholic Social Year Book for 1917* showed that British Catholic charities in war time are dealing with relief among civilians, schools for mothers, thrift, temperance, defective children, agricultural organization, educational improvement, and citizenship.

CHAUTAUQUA INSTITUTION. The leading fact concerning the work of the Institution in 1917 was its very definite functioning with respect to the public mind and the war. In the Chautauqua Summer Schools all the courses of instruction regularly prescribed by the Red Cross were instituted and given special promotion, with gratifying results. Military training for men and women was given. The Speakers' Training Camp held July 2-7 under joint auspices of the Institution and the National Security League drew to Chautauqua about a thousand men and women of place and influence, many of whom had been officially appointed by the governors of their respective States, and more than a dozen of whom have since launched campaigns of popular education in patriotism. The National Security League in a recent bulletin declares that in one way or another, organizations and State propaganda in twenty-four States have resulted. "Wake up America" was the slogan of this gathering. The President of the Institution is Arthur E. Bestor, who was appointed by President Wilson head of the Speakers' Bureau of the Committee on Public Information, with headquarters in Washington. Several periodicals are published at the headquarters, Chautauqua, N. Y., and a New York City office is maintained at 119 West 40th Street.

CHAUVEAU, JEAN BAPTISTE AUGUSTE. A French veterinary, physician, and physiologist, died in Paris January 5, 1917. He was born in 1827 at Ville-neuve-la-Guyard (Yonne). After leaving the Veterinary School at Alfort in 1848, he became chef-de-service at the Lyons Veterinary School, where he was professor of anatomy and physiology by 1863 and director by 1875. Subsequently till his death he served as professor and honorary professor of pathology at the Museum of Natural History, Paris, and as inspector general of the veterinary service. Chauveau was elected to the Institute (Academy of Sciences) in 1886 and held the presidency of the Academy of Medicine in 1913. He was a grand officer of the Legion of Honor. Some of his most important researches were made on infectious diseases. He held that tuberculosis of men and animals was essentially the same and that one treatment should be employed for men and animals in corresponding diseases. With Marey he made notable studies of the physiology of the heart, and devised a method of registering circulation and other physiologic movements. He also investigated, in general physiology, the functions of the liver, and studied muscular physiology. Turning to food values, he opposed the theory that foods could be interchanged so long as the total amount of calories was kept the same, and he refused to recognize food value in any kind of alcoholic drink. Besides many contributions to professional journals and the proceedings of societies, Chauveau published *Traité d'anatomie comparée des animaux domestiques* (1856-57), and with Gariel and d'Arsonval *Traité de physique biologique*. He founded and became director of the *Revue de Tuberculose* and was director also of the *Journal de physiologie et de pathologie générales*.

CHEESE. See DAIRYING.

CHEMICAL ENGINEERS, AMERICAN INSTITUTE OF. See CHEMISTRY, INDUSTRIAL.

CHEMICAL INDUSTRIES. See CHEMISTRY, INDUSTRIAL.

CHEMICAL INDUSTRY, SOCIETY OF. See CHEMISTRY, INDUSTRIAL.

CHEMICAL SOCIETY, AMERICAN. See CHEMISTRY, INDUSTRIAL.

CHEMISTRY, GENERAL PROGRESS OF. The great world struggle naturally stimulated research in 1917 along lines of work that would give promise of ultimate application in the industrial world. The experience of past decades had emphasized the utility of even the most apparently useless kind of experimentation. While the amount of such research in war times obviously was restricted by the call of the workers to immediate and pressing duties, still a goodly amount of general work in chemistry was presented.

PHYSICAL CHEMISTRY. The accurate determination of atomic weights is research, but so important are the tables of atomic weights that are annually presented that an untold valuation is justly attributed to them by the industrial chemical world. In the Twenty-fourth Annual Report of the Committee on Atomic Weights, the determinations published during 1916 were discussed. The only atomic weights to be radically changed were the following: yttrium, 88.91; columbium, 93.13; neodymium, 144.26; and dysprosium, 164.23. Radio-active lead from selected radio-active minerals showed a range of values from 206.079 to 207.015. The isotopes thorium and thorium-ionium were found to have atomic weights of 232.15 and 231.50, respectively. The International Committee on Atomic Weights decided to make no full report for 1918. The table for 1917 will therefore be official for 1918.

Irving Langmuir continued his studies on the fundamental properties of solids and liquids; in 1917 contributing a valuable discussion of the character and nature of the chemical forces. Such forces as are manifested in evaporation, condensation, solution, crystallization, adsorption, surface tension, and the like are commonly ascribed to physical action. The author considered these as being the so-called chemical forces since gravitation is much too small to be of influence in holding atoms and molecules together and in ordinary matter, the positive and the negative electricities are so uniformly distributed that their effective ranges are only of atomic dimensions. The chemical forces that exert an influence in matter are the primary and secondary valences. The differences between solids and liquids are much smaller than those between liquids and gases. For example, the optical and electrical properties of liquid and solid mercury are only slightly different, while such differences between liquid and gaseous mercury are marked. The differences between solids and liquids appear to lie in the mobility of the latter and in such properties as are dependent on mobility, which is due to a shifting of the relative positions of atoms which are chemically combined to each other. This mobility then, was a manifestation of tautomerism which, Lewis had pointed out, was a common characteristic of inorganic liquids. The only solid body which seems to be held together by primary valence is the diamond and probably other forms of carbon as these never occur in the liquid state.

Researches on the structures of inorganic compounds had led to three types of combinations which explained more satisfactorily the phenomena of polymerization and the union of crystal water within a molecule. The three types were (1) combinations due to the saturation of primary affinity only, or the strong electrolytes; (2) combinations due to the saturation of secondary affinity only, or the molecular compound type; (3) combinations due to the saturation of both primary and secondary affinity which may be called the organic compound. Most compounds take up intermediate positions between these extremes.

W. D. Harkins, F. E. Brown, and E. C. H. Davies studied the attraction of liquid surfaces to each other as oil films on water. This is a measure of the solubility of one liquid in another. Such molecules are oriented so that the active group, for example, a carboxyl group, at the end of a hydrocarbon chain is in contact with the water. Double bonds and certain other groups, such as sulphonyl, carbonyl, and hydroxyl likewise exert a polarizing influence and are called the active or polar groups. This attraction of water for these soluble groups is sufficient to make the molecules of the liquid soluble if the attraction is strong enough to draw in the entire molecule, provided the residue is not too long or too large. The authors defined true solubility as "a *molecular scale phenomenon* and is dependent upon the attractions of the different parts of the various molecules for each other, and upon the shapes and sizes of the molecules which must be fitted together to make a solution." The more polar groups that are contained in a molecule, the greater the attenuation of its film on water (due of course to secondary valence). An oil without active groups as pure paraffine oil should not spread at all.

W. D. Harkins presented a publication on the evolution of the atoms and the stability of complex atoms in which he proceeded with the hypothesis set forth by him in 1915, that the chemical elements are very probably intra-atomic compounds of hydrogen (*Jour. Am. Chem. Soc.*, Vol. XXXVII, (1915) pp. 1367-1421). In discussing the hydrogen-helium structure of complex atoms he presented a new periodic system of the element which is the first that is independent of Mendelejef's system. The elements are classified in two series, the even- and the odd-numbered which are headed respectively by helium and lithium. The odd-numbered elements are more abundant in terrestrial matter than the even-numbered, which predominate in both stone and iron meteorites. All elements are combinations of hydrogen and helium. For example, lithium is $He + H_2$, theoretical at. wt. 7, determined at wt. 6.94; oxygen is 4He, theoretical at. wt. 16, determined at. wt. 16.

T. W. Richards and N. F. Hall report further work on the separation of the isotopic forms of lead by fractional crystallization. The results of the observations indicated that not less than 100,000 crystallizations would be necessary to separate the nitrates of radium-D and lead on the one hand and radium-B and lead on the other, if it could be done at all.

A study of the force of chemical valences in the case of certain isomeric nitro-ammonia cobalt compounds was made by determining the densities of three isomerides. The basis of this investigation was the work of Richards in which he had shown that elements are compressible substances and that chemical affinity instead of merely holding elements together, exerts pressure in their inter-action. This force is directly connected with molecular volume. In the first of the isomerides chosen there was no electrovalency, in the second there was one electrovalency and in the third there were three. If chemical affinity exerts an attraction, the densities of these bodies should increase with the number of electrovalencies and this proved to be the case. It was also shown that the solubilities diminished as the number of electrovalencies increased.

INORGANIC CHEMISTRY. A review of the possibility of developing a silicon chemistry was published. There were in 1917 about 500 compounds of silicon known, exclusive of silicic acid and the silicates. A fundamental difference between the analogous carbon and silicon compounds is the striking affinity of the latter for oxygen, in consequence of which most of the silicon compounds are broken down by water. Furthermore the four valencies of carbon are symmetrically distributed in the atom which is not true of the silicon atom.

Experiments showing the action of sulphur dioxide on the oxides of tin, iron, manganese, lead, copper, bismuth, and mercury, were worked out. Tin dioxide remained unaffected at red heat but the monoxide (stannous oxide) reacted with incandescence, producing much sulphur and a nearly quantitative yield of stannic oxide. Ferrous oxide reacted with bright red heat, sulphur and sulphur trioxide were evolved and the residue gave tests for ferrous, ferric, and sulphate ions. Similar results were obtained with manganous oxide—the residue after prolonged heating was pure manganous sulphate. With lead oxide (litharge) the reaction is accompanied by a dull red glow. No sulphur or sulphur trioxide is evolved and the remaining black powder is a mixture of sulphide and sulphate of lead. Black copper oxide reacted with sulphur dioxide to form cuprous oxide and copper sulphate. The reaction with bismuth oxide was of special interest in that it indicated the formation of a lower oxide of bismuth (BiO). No sulphide or free sulphur could be found and only traces of sulphur dioxide. Mercuric oxide yielded the two sulphates of mercury, metallic mercury and sulphur trioxide.

Continued study of the atmospheric corrosion of commercial sheet steel has shown that the character of the rust varies greatly with the composition of the steel. Bessemer and open hearth steels form a loose yellow rust; the other varieties form a dark red, adherent scale. Steels and irons made with copper have the most adherent rust, the period of resistance under the experimental conditions running over 1200 days; in fact they had not failed at the time of making the report. The amounts of copper in such specimens range from 0.181 per cent to 0.268 per cent. The period for mild steels was about 355 days. Charcoal iron and commercial pure iron resist better than mild steel.

ANALYTICAL CHEMISTRY. Reference to the use of "Nitron" as a gravimetric reagent in the analysis of materials used in the manufacture of explosives is appropriate. "Nitron" is a convenient name for 1, 4-diphenyl-3, 5-endoanilodihydrotriazol. The body is basic and forms salts, a great number of which are insoluble in water. It is this property of the nitrate that has led to its successful application as a gravimetric reagent for nitric acid and the nitrates. The "Nitron" nitrate is precipitated from a hot solution containing not over 0.15 gms. of nitrate. This reagent is also applicable in the analyses of nitro compounds, perchloric acid and the esters of nitric acid.

Blood may be detected in urine by adding to 3-4 cu. cm. an equal volume of a 5 per cent alcoholic solution of pyramidone and 6-8 drops of acetic acid. Shake and add 5-6 drops of hydrogen peroxide (12 vols.); an intense violet or bluish violet color develops. This method is applicable to any pathological fluid or to an extract of fecal matter.

Detection of picric acid and its derivatives is easily effected by use of ferrous sulphate—tartaric acid solution. When applied as a ring test the presence of picric acid is indicated by a red coloration.

ORGANIC CHEMISTRY. An investigation of pectins from sugar beets resulted in the isolation of a new substance which stands in the same relation to dextro-galactose as does dextro-glycuronic acid to dextro-glucose. It is named dextro-galacturonic acid. The residual cell material after the removal of the sugar was used to prepare raw pectin. This material is a mixture of two easily separable substances. One of these, present only to a small extent, is a laevorotatory arabin (gum arabic), the other is a calcium magnesium salt of pectic acid. A detailed study of this pectic acid was made and considerable information obtained. This study was of scientific importance and also important because of the possible uses of pectin substances as foods.

Continued studies in halogenation by R. L. Datta and N. Prosad in India were made with the use of nitrogen iodide in conjunction with aqueous ammonia. This reagent was applied not only to phenolic bodies for the preparation of iodine substitution compounds, but was found to be satisfactory as an oxidizing agent in a limited number of cases. It further reacts with a large number of organic compounds (chiefly ketones and amines) to produce iodoform. In most cases, the iodoform only separates from dilute solutions. Iodine in the presence of ammonia does not affect ethyl and propyl alcohols. It does not appear that the presence of the group,—CH_3CO—is necessary for the formation of iodoform. Iodine in the presence of ammonia is also useful as a general iodinating reagent and in the case of pyrrol, the reaction is quantitative and a volumetric method for estimating this body is proposed.

A new hydrocarbon, *spinacene*, has been found in certain fish liver oils. The oils were obtained from two species of fish, *Centrophorus granulosus* and *Scymnus lichia*, respectively, of the shark family or spinacidæ, which are caught in deep water off the Moroccan coast. The liver oils contained nearly 90 per cent of an unsaturated hydrocarbon and had a saponification value of 22.5 mg. of potassium hydroxide per gramme of oil. The new hydrocarbon has the formula $C_{30}H_{50}$ and yields well characterized derivatives.

The chemistry of caramel was one of the subjects that had been undertaken with a view to throwing some light on the constitution of cellulose and the production of humus, peat, and coal. The particular derivative studied was caramelan, which was produced by heating sucrose until the loss of weight amounted to 12 per cent. Caramelan behaves like a ketose and condenses with phenylhydrazine and semicarbazide.

BIOLOGICAL CHEMISTRY. An Italian chemist criticized the use of superphosphates in agriculture. He found that the whole of the phosphorus contained in plants occurred in the form of phosphoric acid combined with mineral bases. Plants do not contain or absorb mono- or dicalcium phosphates (superphosphates). Superphosphates exert a retarding action on the germinative power of seeds. Where universal fertilization is to be effected it is best to apply those mineral substances that the plants themselves contain.

A paper by D. D. Van Slyke and associates on the concentration of hydrogen carbonate in blood plasma showed how the determination is a measure of acidosis. The work was based on the hypothesis that free carbon dioxide is present in the fluids of the body in such concentration that it automatically converts into hydrogen carbonates all bases not combined with other acids. It therefore constitutes an "alkaline reserve" of the body. The carbon dioxide contained in blood plasma was determined by the authors by shaking the plasma from oxalated blood in a separatory funnel with air containing 5.5 per cent of carbon dioxide. This latter gas is estimated by shaking the solution in a vacuum and the volume of the liberated gas is measured over mercury. The average amount of carbon dioxide in terms of hydrogen carbonate in the plasma of normal men is 65 cu. cm. per 100 cu. cm. of plasma under standard conditions. In acidosis this value falls below normal and is less, the greater the severity of the acidosis condition. This method is delicate and can be applied clinically.

A series of articles on acidosis described respectively the following: (1) An electrometric titration of plasma as a measure of its "alkaline reserve." (2) The relationship between "alkaline reserve" and acid excretion in which it is shown that introduction of acid into the circulation increases the rate of excretion of acid salts and acids, also that this relationship is quantitative. (3) The ratio between the tensions (in mg. of mercury) of alveolar carbon dioxide and plasma hydrogen carbonate in a normal man varies from 1.27 to 1.80; the former rises after a meal, while the latter is only slightly increased. (4) The conditions of a number of diabetic patients have been observed with respect to alveolar carbon dioxide tension, hydrogen carbonate in the blood and in blood plasma, hydrogen ion concentration in the blood and the index of acid excretion in the urine from day to day. A noticeable parallelism could be seen in all the curves that expressed the results.

CHEMISTRY, INDUSTRIAL. The achievements during the year in this special branch of science tended to confirm previous anticipations. The plants but recently established in the United States had developed along satisfactory lines and capital had been freely extended to struggling enterprises. Not only was the United

States manufacturing many products previously imported, but the tide was beginning to turn and American export business in chemical products was on the increase. In his presidential address before the American Chemical Society, Julius Stieglitz concluded his remarks on the outlook for chemistry in America by emphasizing "that we have a goodly heritage of success both in our great industries and in our great universities, which will form the safe basis of a brilliant future, if we will but approach the problems of the moment and of the immediate future in characteristically American fashion, with a spirit wisely combining altruistic principles with practical worldly common sense."

In Europe conditions were similar and Great Britain with splendid energy was striving to regain the heritage of supremacy in chemical industries which had passed to Germany.

ORGANIZATIONS. The American Chemical Society held its spring meeting in Kansas City, Mo., during April 10-14. Four new local sections to be known as Southeastern Texas, Central Texas, Toledo, and Michigan Agricultural College sections were authorized. The annual meeting was held in the Massachusetts Institute of Technology in Boston, Mass., during September 10-13. The membership of this important society in 1917 exceeded 10,500. The president during the year was Julius Stieglitz. The American Electrochemical Society held its spring meeting in Detroit, Mich., during May 2-5, and its autumnal meeting in Pittsburgh, Pa., during October 3-6. C. G. Fink was president during the year. The ninth annual meeting of the American Institute of Chemical Engineers was held in New York City during January 10-13, and the semi-annual meeting was held in Buffalo, N. Y., during June 20-22. The president during the year was George W. Thompson.

The Society of Chemical Industry held its 36th meeting in the building of the University of Birmingham, England, during July 18-20, 1917, under the presidency of Charles Carpenter. The membership was reported as 4429, as compared with 4059 in 1916. An increase of dues was recommended and the desirability of a suitable hall in London was discussed. Prof. Henry Louis, who holds the chair of mining in Durham College of Science, was chosen president for the ensuing year. The first annual report on the Progress of Applied Chemistry prepared by this Society was issued during the year. There was organized in 1917 in France a Société de Chimie Industrielle, of which Paul Kestner became president. An American section has been proposed.

NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES. During the week of September 24-29 there was held in the New Grand Central Palace in New York City the third National Exposition of Chemical Industries. There were about 350 exhibitors and it was described as "the largest and most complete exhibition of these industries ever held anywhere." The purpose was not so much to show the progress made in all the chemical industries but rather to indicate where progress could be made and where opportunities awaited development, and how our national resources and wastes might be made more valuable and useful. Typical of this feature among the exhibits was one showing how the United States was saved from "war shortages" of dyes, acids, pulps, and other products by raw materials from the big timber sections of the Southern States.

The exposition was opened with a series of addresses by C. H. Herty, chairman of the Exposition Advisory Committee, Julius Stieglitz, president of the American Chemical Society, C. G. Fink, president of the American Electrochemical Society, and G. W. Thompson, president of the American Institute of Chemical Engineers. Lectures and addresses during the week were delivered as follows: "Glass Manufacture," by Alexander Silverman of the University of Pittsburgh; "The Operation and Work of the National Research Council for the National Weal," by M. T. Bogert, chairman of the Chemical Committee of the National Research Council; "The Tariff Commission and Its Operation," by F. W. Taussig, chairman of the U. S. Tariff Commission: "The Tariff Commission and Its Operation with Reference to the Chemical Schedule," by Grinnell Jones, technical expert to the commission; "The Development of Export Trade with South America," by W. S. Kies of the National City Bank; "The Future of the American Chemical Industry," by L. H. Baekeland of the Naval Consulting Board; and a "Symposium on National Resources for Chemical and Allied Industries," participated in by the following experts, C. H. Crawford, V. V. Kelsey, T. P. Maynard, E. A. Schubert, and J. H. Watkins. Also there were special meetings of the American Institute of Chemical Engineers and the New York Section of the American Chemical Society held in connection with the exposition.

Motion pictures illustrating such important subjects as "Hydraulic Power Development," "Manufacture of Leather and Its Products," "The Manufacture of Glass," "Production of Spelter and Manufacturing of Lead Products," "The Pulp and Paper Industry," "Coal, Coke and By-Products Industry," "The Petroleum Industry," "The Metal Industries," "The Manufacture of Portland Cement," "The Milk Industry," and others were shown. It is estimated that 25,000 chemists and others interested in kindred professions visited the exposition. At its close the New York *Times* described it as showing a "marked optimism as to the future and an absence of the apprehension regarding foreign competition after this war."

RELATIONS OF CHEMISTRY TO THE UNITED STATES GOVERNMENT "Never in the history of the world has the rôle of chemistry in warfare approached anything like its present importance, and the opportunities and responsibilities of the chemist have increased concurrently." The national government has been quick to take advantage of the knowledge of her men of science and the following commissions composed of specialists have been called into active participation in the Great War against the Central Powers of Europe. Under this heading in the YEAR BOOK for 1916 (p. 132) the organization of the Naval Consulting Board was mentioned. Its chemical delegates appointed by the American Chemical Society are L. H. Baekeland and W. R. Whitney.

It was also during 1916 that the National Research Council was established by the National Academy of Sciences at the request of President Wilson. The Chemistry Committee was organized in 1917 with Marston T. Bogert as chairman, who established his office in Washington. This committee worked through sub-committees on Analytical Chemistry; Chemical Apparatus; Biochemistry; Carbohydrate Chemistry; Chemistry of Cellulose and Paper; Chemistry of Cements and Related Building Materials; Chemistry of Ceramics; Chemistry of Dyestuffs and Textiles; Electrochemistry; Chemistry of Explosives; Chemistry of Fats, Fatty Oils, and Soaps; Chemistry of Fermentation and Fermentation Products; Food Chemistry; Chemistry of Forest Products; Chemistry of Fuels; Gases Used in Warfare; Chemistry of Glass; Chemistry of Glue and Other Colloids; Inorganic Chemistry; Chemistry of Leather and Tanning; Metallurgical Chemistry; Mineralogical and Geological Chemistry; Nitrates and Ammonia; Organic Chemistry; Paints, Varnishes, and Resins; Pharmaceutical Chemistry; Physical Chemistry; Chemistry of Rubber and Allied Substances; Chemistry of Soils and Fertilizers; Chemistry of Synthetic Drugs; Platinum and Related Metals; and Potash. Already more than 300 confidential reports have been prepared by this committee, which also acts as the Department of Science and Research of the Council of National Defense.

The Council of National Defense, which consists of the Secretaries of War, Navy, Interior, Agriculture, Commerce, and Labor, has an Advisory Commission of seven members, including Bernard M. Baruch, who was in charge of raw materials, minerals, and metals, and associated under and coöperating with him were committees on alcohol; aluminum; asbestos, magnesia, and roofing; brass; cement; chemicals (with sub-committees on acids, alkalis, electro-chemicals, fertilizers; miscellaneous chemicals; coal-tar by-products, pyrites, and sulphur); copper; lead; lumber; mica; nickel; steel and steel products (with sub-committees on alloys; sheet steel; pig tin; steel distribution; scrap iron; pig iron, iron ore, and lake transportation; tubular products; tin plate; wire rope; wire products; cold rolled and cold drawn steel of the steel and steel products committee); oil; rubber; wool; and zinc.

A chemical division was also organized in connection with the Food Administration. It will devote itself to the control and allocation of chemicals used in the production and conservation of foods. Charles W. Merrill has been placed in charge of this division.

At the request of the Council of National Defense, the Bureau of Mines in coöperation with the American Chemical Society made a census of over 10,000 chemists of the United States for such use as might be necessary.

In February President Stieglitz on behalf of the American Chemical Society placed at the command of the President its "8000 members" with special reference to "matters facilitating preparations of munitions, supplies, medicinal remedies, and other chemical materials."

An American Industrial Commission was organized and sent to France by the American Manufacturers' Export Association of New York City in 1916. Chemistry was represented on the commission by F. J. Le Maistre who prepared *A Survey of the Chemical and Allied Industries in France During the War* which was published in March. According to this report French manufacturers were convinced that they were operating on altogether too small a scale, consistent with the cost of production, and that, if after the war, they were to place themselves in a position to compete with German manufacturers it would be essential to drop certain lines of manufacture and encourage the combination of the others as far as possible. The separate industries are briefly discussed in the report.

Medals. On January 19 the eleventh presentation of the Perkin medal was made to Ernest Twitchell for his services in the field of fats and their saponification. The Willard Gibbs medal of the Chicago section of the American Chemical Society was on May 18 presented to Edward W. Morley for his distinguished contributions to chemistry and especially his studies on oxygen and hydrogen. No award of the W. H. Nichols medal for distinguished research work was made during the year. The second award of the Chandler medal was made to W. F. Hillebrand, who delivered at Columbia University the address on "Our Analytical Chemistry and Its Future."

Metals. ***Aluminum.*** In March the War Metal Company of Germany began the collection of aluminum. This worked special hardship on housewives who had replaced the copper vessels used in the household economy by the more expensive aluminum utensils. The U. S. Bureau of Standards had succeeded in making spinel (magnesium aluminate) refractories and while these had been made in Germany their successful production in the United States would constitute a new industry. ***Antimony.*** A new deposit of antimony ore was reported from South Africa and smelting operations were to be begun. ***Molybdenum.*** A large deposit of this ore was reported from Bathurst. New South Wales. Likewise from southern Peru came the announcement of the discovery of the "largest deposit" of molybdenum ore in the world. The increasing discoveries of various deposits of this ore and the use of the metal in the alloy steel trade resulted in the publication by the Bureau of Mines of ***Molybdenum, its Ores and their Concentration, with a Discussion of Markets, Prices, and Uses.***

Platinum. The platinum deposits in Spain referred to in the Year Book for 1916 (p. 132) were very carefully studied by experts under the Spanish government who report that from an economic point of view the nature of the platiniferous gravel or sand was excellent, as it had no clay to make washing expensive, and no large rocks to interfere with dredging. The platinum contents of the zone studied increased gradually from 8 centigrams a cubic metre at the lower end to 20 centigrams a cubic metre at the last point worked. The quantity of platinum found was regarded as favorable from an industrial point of view considering the present prices of the metal. The experts of the U. S. Geological Survey had reported the presence of platinum in the black sands of Alaska in the vicinity of the Kahiltua River and private concerns had undertaken to exploit these deposits. The growing demand for platinum in the manufacture of chemical apparatus, dentistry, electric lights, explosives, and jewelry led to a careful study of the amount available and the amount used. It was estimated that 65,000 ounces were used annually in the United States of which one half went to the jewelry trade. It was probable that 5,000,000 ounces of platinum had been produced in the world to date. In 1915 about 44,000 ounces were in use in the contact process for the manufacture of sulphuric acid in the United States, and it was reasonable to assume that contact plants in the world had at least 500,000 ounces. The quantity of platinum in chemical and physical equipment could be hazarded as 1,000,000 ounces. Electrical devices might have used half that quantity but it seemed probable that the platinum in use in 1917 in that industry was perhaps 250,000 ounces. The jewelry industry had consumed at least 1,000,000 ounces, and the dental industry an equal amount. Minor uses and hoarded platinum would account for the remainder of the probable supply.

Among substitutes for platinum announced during the year was a gold-palladium alloy, called "palau" which was offered for the expensive platinum-iridium alloy used by chemists. A crucible of this ware was tested at the Bureau of Standards. The loss in weight on heating to 1200°C. was intermediate between that suffered by crucibles of platinum containing 0.6 and 2.4 per cent iridium, respectively. The melting point of the alloy is 1370°C., which corresponds to that of an alloy of 80 per cent gold and 20 per cent palladium. In resistance to most of the chemical reagents to the action of which such ware is ordinarily exposed, palau compares favorably with ordinary platinum ware.

Other alloys to which the name "rhotanium" was given had a gold content of 60 to 90 per cent. Rhotanium is not suitable for use with hot concentrated nitric acid nor for electrolytic anodes, but for other chemical purposes it is entirely satisfactory. Losses by volatilization at temperatures below 1300°C. are less than for commercial platinum. Rhotanium is malleable and ductile, and can be welded with the use of a flux or other reagent. The specific gravity ranges from about 16 to 18.5. It can be used within its temperature limitations in electric heating units. Its high resistance and low temperature coefficient are valuable in this connection. It is satisfactory as material for contact terminals in many forms of automatic electric devices and may be used in this capacity on certain types of telephones, switchboards, signal devices, lighting and ignition systems, and in most other cases except where it has been found necessary to use a high percentage of iridium alloyed with platinum. Its behavior when tested on certain magnetos was satisfactory, but other experiments performed on a high-grade aëroplane-engine magneto gave negative results. Certain of the alloys have given good service in dentistry when used for pins and baked into porcelain teeth, and as thin foil and heavy sheet. Rhotanium is said to be superior to pure platinum for use in jewelry. It is harder and stronger and takes a better finish. It does not tarnish, is noncorrodible, has practically the color of platinum, and can be worked as readily as platinum. Jewelry made with it passes the common jewellers' and platinum buyers' tests.

Tin. This metal was in growing demand for war purposes. In Germany it had been requisitioned by the government. In England the installation of a plant for detinning had been seriously considered in order to prevent the exportation of the large quantities of old tin that had accumulated in the United Kingdom. *Tungsten* was commanding greater importance in the manufacture of high speed steels and while formerly this metal came from Germany it is now smelted in England while deposits of tungsten ore in Burma and China are being exploited. Deposits in California are being developed and greater outputs are reported. See YEAR BOOK for 1916 (p. 132).

Iron and Steel. The flawless rail announced by Dudley in 1916 (see YEAR BOOK for 1916, p. 132) further was reported on by that expert. In reference to finishing the rail he said, "The shrinkage of the hot metal of the rail is more than the simple process of the gradual reduction of length and volume as the temperature falls, for the transformation of the metal from the higher to the lower temperatures should be practically complete through the recalescence at the critical stage in cooling. This is accompanied by the unique phenomena of a rise in temperature during the recalescence with reëxpansion of the metal at its critical range of temperature and both should occur, though sometimes they are only partial in an occasional rail head." He found that flaws in the cooling were sometimes caused by the rails being laid too close together, thus causing curves which must be straightened by dangerous blows. He recommended that instead of being bunched for cooling, the rails be laid six inches apart. He explained that "the rails upon hot beds, when spaced about six inches apart, are free from contact with adjacent rails during recalescence and the successive curvings of the base and head, and cool nearly straight. Thus the rails require only a few light blows in the straightening process to correct the surface and line." In concluding his report he said: "Improvements should be made in the hot bed work also the supports in the straightening process should be widened, which would require less pressure of the gag to straighten the rails of heavy and stiff sections. There should also be regularity in rolling, without delays to an occasional bar, to avoid the rails being rolled so cold that they are liable to be chilled, particularly where the mill is subject to low temperatures in the autumn, winter, and spring."

Potassium. The production of potash salts and potash products in the United States for 1916 represented 10,000 tons of potash with a net value of $3,500,000 which is ten times the value of the output reported in 1915 and the estimated output for 1917 is reported to be even greater than that of 1916. The largest output had been from the alkali lakes of Nebraska but other sources were being rapidly developed. Conspicuous among these were the alunite deposits of Utah and sea weed or kelp from the west coast of the United States. An experimental plant was constructed at Summerland, Santa Barbara County, California, for which Congress appropriated $175,000. The process followed was to distill the dried kelp in retorts constructed on the principle of the by-product coke oven. This resulted in a charred residue containing all the potash salts, which may be recovered by leaching and evaporation. In the process of distillation the nitrogen in the kelp is driven off and recovered in the form of ammonia; combustible gas is evolved in considerable quantities and is available for use as fuel in the retorts and under the evaporating vats, and charcoal and tarry products are also recovered, which may be used as fuel. Iodine is another of the by-products which may be recovered. Another source which has been conspicuously before the public is Searles Lake in California. It is estimated that there are in the waters of this lake 20,000,000 tons of potassium salts. While this source is under control of the government as a reservation a bill was passed by Congress in October authorizing the acquisition of land for the purpose of developing these salts on the payment of a royalty to the government of 2 per cent of the gross value of the output.

The installation of a plant for the recovering of potash from kelp was announced from Queen Charlotte's Island in British Columbia. Also of importance was the announcement of great deposits of potash salts resembling those at Stassfurt, Germany, in Abyssinia. These deposits are not far from Fatimari which is 76 miles south of Massowah and less than 400 miles from Aden. For a summary of the entire subject see *Fertilizers; An Interpretation of the Situation in the United States*, by Joseph E. Pogue, issued by the U. S. National Museum.

From the Japan came the information of increased output of potassium salts notably potassium chlorate used in the manufacture of explosives. The increase in production was tenfold and while formerly its export was prohibited, that embargo had been removed, and large quantities were being sent abroad.

The successful production of potash as a by-product from feldspar in the manufacture of Portland cement was announced from Durham, Ontario, where a plant was turning out 12 to 16 tons daily. At the end of the year it was claimed that within five years every cement plant in Canada could be producing potash as a by-product, and as the feldspar deposits in northern Ontario were immense, there was good reason to accept this claim. It was also said that the cost of manufacturing potash in Canada from feldspar was so low at present that it was even less than the freight charges paid on a ton of the imported German product before the war. The result of this discovery would be the complete breaking of the German monopoly.

NITROGEN. It was said that the great war would early have been over had not Germany, after the Allies had prevented her from obtaining nitrates from Chili, been able to supply the necessary nitrogen compounds required in the manufacture of explosives by extracting nitrogen from the air. It will be recollected that the United States Congress appropriated $20,000,000 for the erection of plants for the synthetic production of nitrogen. (See YEAR BOOK for 1916, p. 133.) In March the Secretary of War appointed a Nitrate Supply Committee of expert engineers and chemists with Gen. William Crozier as chairman to report on the subject. Special reports prepared by Charles L. Parsons were submitted, culminating in the following recommendations: (1) That $3,500,000 be made available to build an initial plant which will produce 60,000 pounds of ammonia a day by the synthetic ammonia process, as offered by the General Chemical Company. (2) That the offer of the General Chemical Company be accepted with some arrangement whereby a maximum royalty per ton of nitrogen, when the product is to be used for commercial purposes, shall be inserted. (3) That the construction of the initial plant be started at once at some point selected by the War Department, reasonably near to sulphur, sulphuric acid, and coal supplies. The plant should be near good water and the land should be available for the later erection of an ammonia oxidation and nitric acid concentration plant. It should be so located that a powder plant may be later erected. (4) That a sum not to exceed $200,000 be set aside for active experimentation on the Cyanide process. (5) That experimentation on the Cyanide process be conducted at Saltville, Va., where nitrogen soda and coal are available and where the present plant of the Nitrogen Products Company may be studied and utilized. In October a location in Sheffield, Ala., was chosen as the site of the first ammonia and nitric acid plant to be constructed by the government appropriation recently made available by Congress for the creation of a new source of supply of nitrates for use in making powder for the government.

It should also be borne in mind that sources for sodium nitrate were constantly being sought. The United States Geological Survey had studied the nitrate caves in the southern states which were used as a source of supply by the Confederates during the Civil War. In one cave there were said to be 1,000,000 tons of nitrous earth which contained not over 2 per cent of nitrate, a very low amount as compared with the minimum grade of material worked in Chili which contained 12 per cent. The Chili deposits were supposed to be approaching exhaustion, but recent surveys showed that at the early 20th century rate of consumption 200 years must elapse before the supply would be exhausted. Certain nitrate lands belonging to the Chilean government were offered for sale, on account of the difficulty of securing efficient management of the manufacturing plants. A large deposit of raw crystalline soda was reported from Lake Magadi in the southern part of British East Africa. This lake has an area of about 324 square miles and contains from 50,000,000 to 200,000,000 tons of sodium carbonate. A plant had been established at this location for the production of soda ash but owing to war conditions it had suspended operations.

FUEL. The demand for coal as a fuel and the difficulty of obtaining it in countries where there are no coal mines led to the increased use of substitutes. In Norway where peat was still abundant engineers had studied the problems of economically collecting peat, and the extensive marshes near the industrial centre of Stavanger were found to contain large quantities which it was estimated would supply the demand for years. The price was fixed by the government at $5.63 a ton (as contrasted with coal at $33.50 a ton) and sufficient was obtained during the summer to supply the demand for the winter. In Switzerland the same problem was met similarly and the usual defects which in the past had hindered the use of peat or turf as a fuel were overcome by the use of machinery. These defects were the tendency to absorb moisture, thus reducing its heat properties; its easy crumbling, causing wastage of material; its bulk, which involved increased freight charges and the necessity for the enlargement of fireplaces for its use. Machinery would press the turf into compact form while extracting the water. This condition would be obtained by tearing the roots and plant fibres and unequal construction and reducing it to uniform size, and by drying it in the air. The result was to be a reduction in bulk to one-fifth of the raw material with a specific gravity of 1.2. Furthermore, it would be hard and resistant, and through the formation of a hard and gelatinlike skin, which formed with the drying, the reabsorption of moisture was prevented, making machine-handled turf incomparably better than that which was treated by hand. It was also found that turf could be used in the production of gas with a by-product of ammonia of about 0.4 per cent which could be used as a fertilizer. In the United States the inoculating of peat with a nitrifying bacteria for raising the nitrogen content from the general average of 2 per cent to 10 per cent, or sufficient to make it valuable for use as a fertilizer was being studied by the division of Mineral Technology in the U. S. National Museum. A smokeless fuel was made by the progressive distillation of woodwaste by means of heated and cold gas in Nanaimo, B. C., where an experimental plant was being operated by this method.

Paper. A scientific study of paper pulps was made by the Bureau of Standards (*Technologic Paper* No. 88). Samples of pulps, each representing a different method of preparation, were examined to determine their chemical properties. The loss in weight produced by reagents, causing hydrolysis and oxidation, and the gain in weight when nitrated have been determined with the same pulps. The effect of sunlight, temperature, and ozonized air on the chemical constants of ground wood were ascertained. Much work had been done with the woods from which the pulps are produced and with the pulps themselves in studying the properties of the fibres and in seeking to find means of judging the paper-making value by laboratory tests in advance. The results were scattered over a wide range of chemical literature, and for the most part were concerned with pulps produced in other countries. The work referred to was carried out chiefly with typical American pulps produced by the several well-known methods in order to ascertain their chemical characteristics as far as possible with the few reliable quantitative methods available. The persistent search for new materials for paper stock resulted in the proposal of lalang grass or blady grass of Queensland, Australia. In quality it was said to yield a product within 10 per cent of the Esparto of Spain. The Chinese barr and the Queensland hemp likewise yielded excellent results. The wattle bark used by British tanners was promising for the production of brown paper and the cheaper grades of white or cream papers, such as for newspapers. In France the subject was studied and conclusions were reached that in the future, the modernization of equipment, the utilization of water power (owing to scarcity of coal), and the employment of raw materials from Equatorial Africa (instead of Germany) were desirable for the successful continuation of the industry. It was also proposed to undertake the manufacture of alfa pulp in Algeria by new processes, and this, if successful, would tend to discontinue the importation of alfa paper from England. In Denmark paper for journals was being made from seaweed, and the cost of the process was said to be half that of making paper from wood pulp. In South America, there was a shortage of paper due chiefly to former dependence for supplies from abroad which had been discontinued since the war. The high prices in 1917 and the scarcity of material led to the utilization of native woods and native fibres for pulp, especially in Brazil, where new mills were erected and the problem was being worked out so that native raw materials can be utilized. In Venezuela a satisfactory grade of paper was being made from native grasses. The famous Kraft paper, conceded to be the strongest and most economical wrapping paper known, was formerly made only in eastern Canada, but a plant was established at Port Mellon on Howe Sound, British Columbia, for its manufacture. Kraft paper is made from pulp obtained by an alkali process from Douglas fir, spruce, hemlock, cypress, cotton-wood, and other coniferous woods. The process used is particularly adapted to the economical conversion of what would otherwise be waste wood from saw mills into pulp and eventually into the stronger paper which has about twice the strength of Manila paper of equal weight.

Explosives. One of the by-products from the coffee berry husk is manita which if properly combined with nitrogen makes an explosive of about the same power as dynamite or mercury fulminate.

Sugar. The chemists working in coöperation with the Council of National Defense announced in July the discovery of a secret process for the manufacture of glycerine from sugar which if practicable would reduce the cost of explosives and be of value in the conservation of fats. The announcement of a new process by means of which sucrose might be recovered from final molasses came from the Hawaiian Islands. The principle on which the inventor had worked was that it is not the glucose gums or ash but solely the water in molasses that has prevented the sucrose therein from crystallizing. Removing the water is the only method by which it can be made to give up its sucrose, he believed. This is the first step in the process—boiling the molasses to a practically complete absence of water. The next important departure in the new process is the use of a high-speed centrifugal. Experiments in the use of carbons for decolorizing sugar products made in London especially with secret carbons known as "eponite" and "norite" showed that the addition of starch mucilage to wood treated with calcium acetate increases the decolorizing power, and charcoals were made from pine and cedar wood with this addition to the calcium-acetate process. The decolorizing power was thereby increased, but subsequent comparison with eponite showed that the latter substance was still superior. During these and other experiments the conclusion was reached that the temperature employed was not sufficiently high. Efforts are now made to encourage the production of beet sugar in Great Britain, but so far without any appreciable results. It is generally admitted that sugar beet can be successfully grown in that country, and it is claimed by experts that the English beet contains a larger percentage of sugar than that grown on the Continent.

Artificial Textiles. It was reported from Germany that the spinning and weaving industries had been very active during the year. Many new textiles were produced from artificial fibres that hitherto had been considered worthless. Paper was finding an increasing use in the manufacture of clothing. The activity of the artificial silk industry also was unusually great.

In England yarns and twines occupied the chief attention, although the advisability was considered of using a paper lining for wool bags, or even a bale composed entirely of paper, in order to obviate the trouble caused by minute particles of jute or hemp getting into the wool during transit or storage. Such particles were difficult to detect, and often had remained concealed until the dyeing of the cloth, when by reason of vegetable fibres taking different dyes from wool of similar animal fibres, a pronounced line or defect appeared in the fabric. Paper would dissolve in the process of manufacture, or in some instances paper linings of bright hues could be used and particles therefrom would immediately be discernible in the wool. The uniforms of German prisoners analyzed in England showed the material to be made of a union of cotton, shoddy, and paper. In Argentina a concession was sought from the government for the manufacture of sisal twine, cordage, bagging, sacks, etc., from native fibres. After exhausting the existing wild fibres, it was proposed to cultivate agave and similar fibres for the purpose mentioned.

ARTIFCIAL MILK. There was patented in England an artificial milk for human consumption which may be prepared as follows: In 200 pints of pure water at 80° C. are dissolved 400 grains of potassium phosphate, or the equivalent amount of sodium phosphate; sufficient sugar is added to give 4.5 per cent to the finished milk and 40 pounds of meal prepared from peanuts or soya beans, blanched. The solution is boiled in a steam-jacketed pan, then subjected to the operation of a vacuum pan and finally treated with a culture of lactic bacteria until the required acidity is obtained. It is afterwards pasteurized at 60 degrees to 70 degrees C. for at least 20 minutes, cooled and stirred, while 0.05 per cent of citric acid is added. The milk so produced may be condensed and sold in tins in the usual way or dried to a powder and sold in bottles. It may be given a certain percentage of cream by the addition of coconut or one of the other tasteless nut fats, the fat being added when the substance is in the vacuum pan.

A NEW ANESTHETIC. Gordon Edwards of San Francisco, Cal., has invented an anesthetic composed of quinine, hydrochloric acid, and urea which he has named nikalgen. It is sprayed on the open wound from an atomizer and has been extensively used by the Allies in base hospitals.

GLASS. The persistent efforts of the experts in the Bureau of Standards and elsewhere succeeded in producing a satisfactory quality of optical glass so that in May Secretary Redfield announced that henceforth the United States would "be independent of any foreign supply of this important element of warfare." The best material formerly came from Germany. The glass industry in England was in a most unsatisfactory condition prior to the war owing to foreign competition but both for chemical glassware and optical glass the industry was revived and in 1917 was reported to be in a flourishing condition.

NEW GASOLINE PROCESSES The Rittman process for transforming a large proportion of the residues of petroleum refineries into gasoline, benzene, and toluene, which was referred to in the YEAR BOOK for 1916 (p. 136) by 1917, according to Prof. Thomas H. Norton had "issued from the experimental stage and taken its position as a recognized industrial asset in the nation's cycle of productive activity. By its aid vast quantities of petroleum waste, hitherto available for little beyond fuel purposes, can be transformed at will either into gasoline for use in motor engines or into benzene and toluene, also susceptible of the same utilization but constituting likewise the crude material for the manufacture of the two coal-tar high explosives —picric acid and trinitrotoluene—and forming also the starting points for the synthesis of an almost endless variety of dyestuffs, medicinals, photographic chemicals, artificial flavors, and perfumes." Louis B. Cherry of Kansas City, Mo., submitted to the authorities at Washington a new method for converting kerosene into gasoline at a cost, the inventor says, of less than one cent a gallon. The process was described as electro-magnetic, and in a test plant at Coffeyville, Kan., 78 per cent of kerosene was converted into a water-like gasoline of sufficiently high quality to run a motor.

Motor Fuel. The use of coal gas as a motor fuel on account of the restriction in the use of gasoline, is growing in Great Britain. In lieu of the former steel tank used as a container a canvas bag with an inner layer of rubber shaped like a mattress is substituted. It holds the gas drawn from the main and is strapped to the top of the motor omnibus or to the rear of the automobile. Experiments seem to show that the equivalent of a gallon of gasoline is about 300 cubic feet of gas. In practice it would seem as if coal gas would show appreciable economy as compared with gasoline, as at normal prices gas costing 16 cents would do the work of a gallon of gasoline. From Birmingham comes the statement that already 500,000 gallons of gasoline a year had been replaced by gas, and that this quantity was being steadily increased as the use of the new fuel grew. The only complaint made was against the size of the bulky containers. It was suggested that a small supply of acetylene gas that could be regulated and mixed with coal gas at the carbureter would strengthen the explosion and supply the necessary "kick." Along the lines of Natalite, mentioned in the YEAR BOOK for 1916 (p. 135), there was being made in Hyderabad, India, a motor spirit from the mahua plant. It costs about half that of the ordinary petrol, and as the raw material is plentiful, the quantity for annual consumption of motor fuel in the province can readily be had.

DYESTUFFS. Persistent search for natural dyestuffs that could be used in place of artificial compounds led to the announcement of a discovery by means of which the brilliant colors of autumnal leaves could be made available and a demonstration was made of every possible shade from glistening gold to the darkest seal brown, including grays and taupes. This process has been patented. A new dye material called "algarrobin" from the wood of the carob tree was exploited in Argentina. Its chief use has been in dyeing khaki cloth for Argentina military uniforms. The dyeing properties of algarrobin as well as its fastness to fulling, light washing, etc., render it valuable. Alone it imparts a light brown color to any textile fibre, cotton or silk, which may be fixed by appropriate mordants, according to the shade desired. In combination with vegetable extracts, such as fustic, hypernic, logwood, etc., it gives a number of varied and fast colors.

Dyestuff Situation in the United States. The commercial supremacy of the United States in this branch of industry seemed more and more likely to be permanently established. The National Aniline and Chemical Company, consisting of the Schoellkopf Aniline and Chemical Works, the W. Beckers Aniline and Chemical Works, the National Aniline and Chemical Company, the Benzol Products Company, the Barrett Company, and the Semet-Solvay Company, was organized in June. The plants of the company are in Buffalo, Brooklyn, and Wappingers Falls, N. Y., Easton, Marcus Hook, and Frankford, Penn. The aim of the management was to manufacture coal tar dyes and intermediates which could compete successfully, both in quality and variety with those heretofore imported. As the constituent units of the new company included manufacturers of raw materials, of intermediates, and of coal-tar dyes, the company in one organization covered the industry from raw material to finished products. Later came the statement that the E. I. du Pont de Nemours' Company in Wilmington, Del., had decided to enter the coal-tar dye industry for the manufacture of synthetic dyestuffs and kindred products. It was believed that the du Pont concern would produce alizarin, synthetic indigo, eosine and derived colors, rhodamines, and various minor groups of azo colors, sulphur colors, and vat colors, the latter as yet practically undeveloped in the United States. As interpreted by some, the restoration of peace may find the National Aniline and Chemical Company closely affiliated with the big German producing companies, either in an active working agreement or other arrangements of a mutually advantageous character. On the other hand it was claimed that the du Pont Company had arranged to supply permanently the government-aided coal-tar dyestuff industries of England, France, and Italy with such intermediates as might be required to render these industries absolutely independent of Germany in the future for such products. These European government subsidized concerns were known, respectively, as British Dyes, Limited, Société Nationale des Matières Colorantes, and the Italian National Dyestuff Company.

Of all the industries created or developed as a direct result of war conditions, none had shown more rapid progress than American dyestuffs. From only 7 establishments, in which 528 people were engaged in producing 6,619,729 pounds of coal-tar colors, valued at $1,126,699 in 1914, the industry had developed until at the end of 1917 it not only supplied the domestic demand for colors, but had even invaded the foreign market in European neutral and allied countries including Canada, Mexico, Argentina, Brazil, British India, and Japan. A questionnaire concerning the dyestuff industry sent out in June by the Bureau of Foreign and Domestic Commerce resulted in showing invested capital in this industry, amounting to $158,913,650 and it was believed that if full and accurate data were obtained an estimate of $200,000,000 "would be too conservative." The current monthly production of 46 manufacturers of finished dyes was reported to be at the rate of 5,000,000 pounds a month or 60,000,000 pounds annually, individual outputs ranging from 600 to over 2,000,000 pounds each.

In November the statement was made by high authority that "American colors are made from practically the same chemical formulas as those of Europe and are practically the same product in every way. The situation is at present very satisfactory and every American consumer should be able to procure practically everything he needs for next year." Also it was understood by the public that American colors were not as fast as European colors, but no manufacturer or retailer ever guaranteed colors before the war. "Fancy colors which women usually want in silk, such as pinks, light blues, light greens, and heliotrope, were never fast, and as far as I know there never have been any dyes which would make them fast. The word 'fast' is more or less of a misnomer, as a color which is absolutely fast to everything is practically unknown." The reason for the high prices in 1917 charged for American-made dyes was not due to the fact that labor was higher in America than in Europe, but to abnormal conditions generally and the higher price of raw materials, the raw materials used in dye-making being practically the same as those used in the manufacture of munitions. The prices of American colors should be normal after the war.

Dyestuff Situation in Europe. In the Trade Supplement of the London *Times* for October, the conditions in chemicals and dyestuffs were reviewed and the claim made that "better supplies of dyestuffs than formerly are now available in this country" and that "there has been a distinct improvement from every point of view." Many of the essential colors of the dyeing trades were still lacking, but there was also an increasing supply of natural products. At the annual meeting of the Bradford Dyers' Association an improved condition was reported and also that the volume of business was "vastly greater than in 1915." Indeed, it was said that "after two and a half years of war so far from our industries having collapsed, they are in a more flourishing condition than in any previous period of our history"; also "with the exception of America, Great Britain is at the moment the only serious producer of dyed textiles for export." From another source it was learned that ultramarine was being produced in Hull, and that synthetic indigo was being made in England. There was still a shortage of cotton yarns but large quantities of it were being imported from the United States, especially of the finer shades. England still exported to Switzerland (chiefly) and elsewhere, aniline oil, toluidine, and other crudes.

In order to supply requirements and to combat foreign supremacy in the dyestuff industry after the war, a new company was floated in Paris under the title Compagnie Nationale de Matières Colorantes et de Produits Chimiques. Its capital was fixed at $7,720,000 in shares of $96.50 each, of which 60,000 shares were offered for public subscription. The other 20,000 shares were taken up by the promoters, among whom were leading textile manufacturers, chemical producers, and the head of the firm, the Blanchisserie de Thaon, which, prior to the war, held a practical monopoly in the French finishing trade for textiles of wool and cotton. The growth of the dyestuff companies in Japan caused an oversupply of certain dyes in the local market.

When the war started the local dyers suffered, but the establishment of many companies and the large increase in output flooded the market and a petition was presented to the government to cancel the ban on exports. Black dyes and sulphuric dyes were also tending to be overstocked.

PROGRESS OF INDUSTRIAL CHEMISTRY IN EUROPE. In England the importance of utilizing waste food, particularly fat and bones, and other organic waste, and also waste paper, cardboard, etc., was realized by the government and efforts were being made to stop this loss. The bones and fat were used for the production of glycerine for munition purposes and the paper was converted into paper pulp. The Huddersfield Technical School installed new equipment and provided new courses in coal-tar chemistry, textile industries, and engineering.

In order to facilitate the resumption of industrial activity in the invaded district of France a bill was prepared that provided for the opening of a credit of $20,000,000 and authorized the government to make expenditures of $50,000,000 for the accumulation of industrial equipment and appliances for the resumption of industrial activities. This stock was to include raw material and goods sufficient to meet the first requirements on the resumption of operations after the war.

From Switzerland reports showed improved conditions. The shortage of raw materials was relieved by shipments from the United States and new local products. The shortage of hydrochloric, nitric, and sulphuric acids prevented the output of ammunition from being as great as desired, but a new factory for acids was constructed near Basel, which would supply this want. A new soda factory in Zurzach was opened in August. Smaller shipments of coal-tar dyes and of indigo to the United States were noted.

In Germany of paramount importance was the great consolidation of the dyestuff interests which seemed to threaten the infant industries in this line in the United States and elsewhere; for since 1914 dyestuff plants had been established in France, Italy, and Russia. The Haber process for the extraction of nitrogen from the air and the production of synthetic ammonia and ammonium sulphate had increased from 30,000 tons in 1913 to an estimated amount of 500,000 tons for 1917. In the field of chemistry according to Roth in the *Düsseldorf Anzeiger* "rapid advances have been made from the laboratory to the manufacturing stage in the synthetic production of important organic compounds, as well as of such war material as rubber and explosives. Above all, the chemical conquest of the air for agriculture has made great progress. The business of extracting nitrogen from the atmosphere has been so successful that in 1917 the government will be able to dispose of 5,000,000 tons of nitrous manure, which is four times the amount needed in peace time. The equally difficult problems of the production of glycerin, toluol, benzol, and sulphuric acid have also been solved." The *Neue Zeitung* of Zurich published a review of German activities in industrial processes and said that in the metal industry further progress had been made with the production of substitutes for copper, brass, and bronze, special mention being made of zinc and lead alloys and of the increasing importance of aluminum. There had been new developments in ore smelting. With copper schists the metallurgical possibility of going as low as 0.7 per cent had been shown, whereas formerly the average lower limit was 2.5 per cent. Operations had been begun upon large deposits of sandstone containing white lead. Successful experiments had been made in obtaining aluminum from clay, which would make Germany independent of foreign bauxite in future. With nickel ores the workable limit had been reduced from 2.5 to 1.5 per cent. A process had also been discovered for obtaining nickel and cobalt from pit waters containing these metals.

Reports from Russia showed that chemical factories had been built near the sources of supply of raw materials and coal, materially changing the trend of the industry, which, prior to the war, was being developed near the Russian-German frontier, and involved the use of large quantities of raw materials from Germany. Of special note was the production of chemicals used for the preparation of explosive materials and artificial dyes, toward the increase of which the government and industrial and educational circles were bending their efforts. The same may be said of pharmaceutical preparations; the production of an entire series of products was put on a solid basis. The total production of the old and new factories should run considerably in excess of Russia's production prior to the war.

Until Italy's entrance into the war, the trade in acids, sulphates, oxides, carbonates, nitrates, etc., was with Germany. The war forced Italy to manufacture many articles, but a large market will be open at the close of hostilities.

As South Africa was compelled to import practically all of its chemicals in order to develop its great natural resources considerable agitation was had during the year in favor of establishing chemical industries in that territory.

It has been pointed out that there was a remarkable development of chemical products manufactured in Chile. Chile in 1917 had 100 factories of more or less importance in this industry. Formerly nearly $2,000,000 worth of chemical and pharmaceutical products were imported; in 1917 Chile imported less than half of this amount, as the country supplied a large share of the local demands.

From an interview with a leading Japanese chemist it appeared that the list of chemicals being manufactured in Japan was rapidly increasing. Her domestic demand was large and growing and she was also beginning to export her products. A chemical field which Japan had conquered was that of safety matches. Plants for the manufacture of potassium chlorate had sprung up. The kelp of the seacoast seemed almost inexhaustible, and from its reduction potassium chloride and iodine were saved. The immense water-power available afforded cheap electric energy for converting the chloride into chlorate. The yellow and red or amorphous phosphorus was obtained from bones and phosphates. Artificial fertilizers were among the established enterprises. Japan makes sulphuric, nitric, and hydrochloric acids, morphine salts, salicylic bromide, atropine salts, bromide salts, creosote, and chloroform. The manufacture of salicylic and carbolic acids was under way. Formalin and celluloid were made in commercial quantities. Cyanides were manufactured and nitrogen from the air was in process of extraction.

Asphyxiating Gases. The newspapers in May announced the invention of a lachrymose or tear gas by Robert W. Wood of the Johns Hopkins University. According to the author it was essentially a benzyl-bromide or chloracetone vapor that produces temporary blindness but no permanent injury. It was turned over to the French War Department. In August the Germans in an attack on Armentières used shells that contained a colorless liquid that spread over the ground. Only very slightly volatile it left traces for hours after the shell had exploded. It evaporated very slowly, producing a heavy gas which filtered downward and reached the cellars where refuge had been sought. This gas, remarkably tenacious, had an odor that was described by some as recalling acetylene, by others as resembling mignonette, but the majority said it was like hot mustard. It takes some time to produce its effects. It had made more victims among women than among men, because it penetrated the hair and remained there, while tobacco smoke had proved an unexpected protection for men. French investigation tended to show that it was not a new thing but a mixture of sulphur and chlorine, already studied and known, but never before used in this manner. The proportion of deaths to the number of people affected was not more than 1 per cent, but the number of people affected might be very great.

The Ordnance division of the U. S. Army sought the advice of chemical experts on gas and flame innovations and a special committee of chemists to study the subject was appointed. A special course of instruction on this subject was established at the Army Gas School at Fort Sill, Okla.

CHESS. The twentieth annual intercollegiate chess championship was won by Columbia for the second year in succession, with 9½ points. Yale was second with 6 points, Harvard third with 5 and Princeton last with 3½. The Columbia team comprised Wolfson, Isaacson, Sterman and Clapp.

The Rice Progressive Chess Club of Manhattan Borough, New York, captured the Metropolitan title with six victories and no defeats. The Manhattan Club finished second with 5 matches won and 1 lost and the Staten Island Club third with 4 matches won and 2 lost.

In the masters' tournament A. Kupchik, New York, was the victor, J. Bernstein and O. Chajes being tied for second honors. E. L. Gluck was the winner of the general tournament, first class, while Henry Ring and J. F. Engel tied for first place in the second class competition. K. B. Allured won the third class laurels.

Edward Lasker of Chicago won the Western championship with 6½ victories and 1½ defeats. J. W. Showalter of Georgetown, Ky., and J. Winter of Detroit were tied for second with 4½ games won and 3½ games lost.

C. S. Howell, a New York player, triumphed in the tournament held by the Havana, Cuba, Chess Club by a score of 3½ to 2½. Juan Corzo of Cuba took second honors with a total of 3 victories and 3 defeats.

CHESTNUT BLIGHT. See Botany, *Plant Diseases.*

CHICAGO. See Docks and Harbors; Illinois; Rapid Transit.

CHICAGO, University of. A co-educational, non-sectarian institution of higher learning in Chicago, Ill. In the fall of 1917 there was 4335 students and 303 members of the faculty exclusive of assistants. Volumes in the library numbered 517,936. Productive funds in 1917 amounted to $23,283,563 and the income to $1,294,566. The University was founded in 1891 largely through gifts by John D. Rockefeller and since then has been greatly indebted to him for maintenance. In 1917 among the gifts for endowment there was received from Mr. Rockefeller $799,921, a part of the seventh installment of his final gift of ten million dollars. Of this amount $200,000 was set aside toward the cost of a proposed chapel. Other gifts include $232,417 toward endowment of the Chicago Medical School; nearly $16,000 for prizes and the endowment of fellowships and scholarships; and $775,000 for new buildings, of which $300,000 was from the Billings family for the Albert Merritt Billings Memorial Hospital, $50,000 was from Mrs. Joseph Bond for a chapel for the Divinity School, and $150,000 was received from a friend for a Theology building. President, Harry P. Judson, LL.D.

CHILD LABOR. The important aspects of the child labor problem during 1917 were the inauguration of the Federal Child Labor Law and the tendency to break down compulsory education and child labor laws because of the scarcity of labor. This latter problem had become serious in England, France, and Germany two years earlier and in all of them there had been a very marked lessening of educational effort and a concurrent recruiting to the ranks of labor of large numbers of children who in times of peace would have secured the advantages of further education.

The National Child Labor Committee held its 13th annual conference at Baltimore, March 23-25. Various aspects of child labor legislation, of the enforcement of child labor laws and problems of war time were discussed. This committee gave extended attention to the efforts being made to draw children to farms and truck gardens even at the sacrifice of educational opportunities. It suggested that for younger children teachers, boy scout leaders, playground directors, and others interested in child welfare should form themselves into summer agricultural faculties for the purpose of utilizing idle children in the cultivation of vacant city lots or suburban property. For older children they suggested the creation of a state committee which should coöperate with farmers in securing the employment of boys and girls suited to agricultural work. However, the committee suggested that only children 14 years of age and over should be permitted to work on farms for others than their parents; that for this purpose they should be excused from school from June 1 to October 1 only; that they should not be allowed to work more than 8 hours a day, nor for more than 6 days a week; that such children must secure special work certificates based in part upon a physician's report that they were physically unable to endure the strain of farm labor. The committee held strongly that the transportation, feeding, and housing of such agricultural laborers should be under public supervision. It pointed out that

England had learned belatedly that the suspension of child labor laws and the breaking down of educational training was disastrous and that America would do well to learn by England's experience.

One of the investigations carried out by the committee dealt with the relation between school attendance and farm labor by children in Oklahoma. A number of its agents were sent to that State and made extensive inquiries. It was found that in rural districts the children of tenant farmers outnumbered the children of farm owners by 3 to 2, and that over half of the children of tenants belonged to "migrant" families. Six thousand children were studied in detail. It was found that on an average each farm working tenant's boy missed 42.2 days of school of which 32.5 days were spent at farm work; on an average the boys of farm owners lost 35.6 days of school of which 26.3 were spent in farm work; the boys of hired laborers lost on an average of 29.6 school days of which 23.1 were spent at farm work. These boys and girls lost a total of 185,707 school days out of 800,442. Farm work accounted for 73,121 days; illness for 44,148; and other causes, primarily parental indifference, for 26,382. Of those working on farms 51.1 per cent were retarded in school. It was found that even the low standard for compulsory education required by the Oklahoma law was far from realized in practice.

National Child Labor Law. The Keating-Owen Law, otherwise known as the Federal Child Labor Law, became effective September 1, 1917. It was enacted under the interstate commerce clause of the Constitution and consequently applied only to goods produced for shipment in interstate commerce. In substance this law prohibited the shipment in interstate commerce within 30 days after production of any goods produced by children under 16 employed in mine or quarry; by children under 14 in any industry; or by children under 16 working more than 8 hours per day or 6 days per week or before 6 a.m. or after 7 p.m. in any mill, cannery, work-shop, factory, or manufacturing establishment. It was pointed out that this statute applied to only 150,000 of the 2,000,000 children under 16 employed in American industries. Nevertheless the act was expected to affect many other children indirectly by hastening the standardization of the laws of the 48 States and by stimulating the perfection of methods and machinery for administration and enforcement.

The law provided that the Secretaries of Commerce and Labor with the Attorney-General should constitute an administrative board with ultimate responsibility in the administration of the law. Immediate responsibility was given to the Children's Bureau of the Labor Department under Miss Julia Lathrop; in this Bureau a Child Labor Division was organized under the direction of Miss Grace Abbott. Late in February letters were sent to the governors of the States asking that legislative action be taken to avoid duplication in requirements for proof of age. It was pointed out that the States might either enact in their laws the requirements established by the Administrative Board or might authorize a committee of State officials to draw up regulations subsequently to be approved by the Administrative Board. In July there was held at Washington a conference of producers, manufacturers, and dealers, for the discussion of rules and regulations. These dealt with proofs of age, conditions for the acceptance of State certificates by the Federal authorities, and the forms of guaranty whereby employers may protect themselves from prosecution. In view of the war situation efforts were made in various quarters to secure a suspension of the act or a postponement of its inauguration, but this activity met with little favor either in Congress or from the public, though a bill to that effect was introduced in the House.

The *constitutionality* of the law was attacked in an injunction suit before the Federal District Court in North Carolina. This suit was brought by one Roland H. Dagenhart in behalf of his two sons. Hearings were held August 29, 30, and 31. On the latter date Judge Boyd of the Federal Court for the Western District of North Carolina held the law unconstitutional. This suit was pressed by the Southern Cotton Manufacturers' Association and defended by the National Child Labor Committee and the Federal government. Representing the mill owners were important law firms of New York and North Carolina. Representing the government were District Attorney Hammer, T. I. Parkinson of the Legislative Drafting Fund of Columbia University, and Roscoe Pound, Dean of the Harvard Law School. Judge Boyd's decision declared that the law deprived the parent of the property right in the services of his children. His opinion declared that the law was an effort on the part of Congress to control manufacturing within States by an undue extension of its power to control commerce between States. Appeal was taken to the United States Supreme Court.

Other Legislation. Very little advance was made in child labor legislation in 1917. This was primarily owing to the war situation. The main effort in fact of those interested in raising the standards of child labor laws was directed toward the prevention of the suspension of laws and standards already in existence. In spite of these efforts, however, various States took steps toward a relaxation of child labor restrictions. Connecticut and New Hampshire authorized their governors to suspend any labor laws during the continuance of the war at the request of the Council of National Defense. In Vermont a similar power was given to the commissioner of industries with the approval of the governor. In Massachusetts a committee of five to be appointed by the Board of Labor and Industries with the approval of the governor was authorized to grant permits for the suspension of labor laws after hearing. In California the State Board of Education was empowered with the approval of the governor to reduce the school term to 6 months, when deemed necessary "for the planting or harvesting of crops or for other agricultural or horticultural purposes." The New York Commissioner of Education was given authority to suspend the compulsory educational law from April 1 to November 1 "for the purpose of aiding and permitting labor in the cultivation, production, and care of food products and gardens within the State;" the commissioner. however, was authorized to lay down the rules under which children might be excused from school for such labor. On the other hand, on February 1 a law of 1916 became effective in New York State whereby children under 15 seeking employment must be graduates of elementary schools. Those not graduates must remain in school until their 15th birthday; and if they have not completed the first 6 grades of the public schools they must remain in school until their 16th birthday. This law was due in part to the extensive recruiting of child labor during 1916. It was found that 61,000 more children were employed in 1916 than in 1915, an increase of 27 per cent. It was expected that the new law would force from one-fourth to one-third of these back for more schooling. Delaware, Illinois, and Kansas raised the educational requirements for work certificates and otherwise improved the administrative aspects of work permits. Tennessee and Vermont enacted laws similar to the Federal act, providing an eight-hour day, no night work, a 14-year limit for factories, work shops and canneries, and a 16-year limit for mines and quarries. North Carolina raised its compulsory educational limit from 12 to 14 years and South Carolina from 14 to 16 years.

EUROPE. Statistics regarding the employment of children in Europe since the war began are almost entirely wanting. Mr. Owen R. Lovejoy, General Secretary of the National Child Labor Committee (the *Child Labor Bulletin*, May, 1917) showed from various indications that in France children have been placed in many kinds of manufacturing and agriculture; that in Russia the employment of children in factories and fields is widespread, and that similar statements may be made of Hungary, Austria, Germany, Italy, and England. From the latter country alone was more exact information available. Mrs. Sidney Webb estimated that while over 15,000 children had been formally exempted from school in 1916 more than 50,000 others had left school for work without special exemption. Sir James Yoxall believed that in all between 150,000 and 200,000 children between 11 and 13 had left school to go to work. Approximately 500,000 children between 12 and 15 or 45,000 more than the normal number left school in 1915 to go to work and this number was probably far greater in 1916. In addition great numbers of schools have been wholly or partially suspended, it being estimated that at least 300,000 children formerly attending school were thus excluded. There was a marked increase of juvenile delinquency in London, Manchester, and Edinburgh. The abnormal demand for labor resulted in unusually high wages for children. Many thousands of children 10 to 14 years of age were released from school for work on farms. Many other thousands were drawn into munitions factories. The Committee on Health of Munitions Workers declared that many of these were having their health and vitality sapped by the excessive drain of war work. Consult *The Child Labor Bulletin* and *Annual Report* of the National Child Labor Committee. See bibliography under LABOR.

CHILDREN'S COURTS. See JUVENILE COURTS.

CHILE. A republic of South America, extending along the Pacific coast southward from Peru. The capital is Santiago.

AREA AND POPULATION. Chile is a long, narrow country lying between the Andean crest and the Pacific. Its length, from the Peruvian border to the southern limits of South America, is about 4230 kilometres (2628 miles); its width, though varying, may be stated as approximately 285 kilometres (177 miles). The country is divided into 23 provinces and one territory. The total area is estimated at 750,572 square kilometres (289,796 square miles); this is about five times the area of the State of Michigan. The census of November 27, 1907, returned a population of 3,249,279; of these, Chileans numbered 3,114,755 (1,531,844 males, 1,582,911 females), and foreigners 134,524 (92,377 males, 42,147 females). In 1907, about 43.3 per cent of the population was returned as urban, compared with 38.6 per cent in 1895 and 34.3 per cent in 1885. The population as calculated for January 1, 1916, was 3,789,864; for January 1, 1917, 3,870,002.

About one-fourth of the people are of pure Spanish stock, and the remainder either mestizo or pure Indian. Following are the principal cities and towns, with population calculated for January 1, 1916, and the average annual increase per cent from the 1907 census to 1916: Santiago, 397,550 (2.25 per cent); Valparaiso, 201,507 (2.73); Concepción, 68,902 (2.78); Antofagasta, 56,295 (7.11); Iquique, 45,502 (1.57); Talca, 41,618 (1.13); Chillán, 38,543 (1.48); Viña del Mar, 32,577 (2.73); Temuco, 27,616 (7.03); Valdivia, 23,464 (5.45); Talcahuano, 21,876 (4.35); Curicó, 21,849 (2.76); Punta Arenas, 20,235 (6.53); Coquimbo, 16,902 (4.26): Serena, 16,128 (0.13); Taltal, 15,665 (3.97); Rancagua, 15,449 (3.76); Los Angeles, 15,217 (3.35); Linares, 14,668 (3.53); Quillota, 12,857 (1.46); Victoria, 12,131 (2.89); Lota, 11,584 (0.96); San Bernardo, 11,502 (5.22); Tacna, 11,453 (2.67); Parral, 11,149 (1.31).

Below are shown for five years marriages, births, and deaths, by number and by rate per thousand inhabitants:

	Marriages		*Births*		*Deaths*	
	No.	*Rate*	*No.*	*Rate*	*No.*	*Rate*
1912	...21,258	6.1	135,373	38.7	103.905	29.7
1913	...21,461	6.0	140,525	39.4	107.200	30.3
1914	...19,002	5.2	136,550	37.5	100,059	27.5
1915	...19,150	5.2	136,597	36.8	96,716	26.0
1916	...20,121	5.3	144,193	38.0	99,856	26.3

Of the total births in 1916, 74,235 were male and 69,958 female. Illegitimate births numbered 54,987 (38.13 per cent). In twenty years, that is, from 1896 to 1916, the proportion of illegitimate births increased from 33.2 per cent to 38.1 per cent.

EDUCATION. Of the population at the 1907 census, 1,298,218 could read, that is, 40 per cent, or 42.0 per cent of the males and 37.9 per cent of the females. In 1895, only 31.8 per cent of the inhabitants could read, or 34.3 per cent of the males and 29.2 per cent of the females. Primary instruction is free, but not compulsory. In 1916, the number of pupils who received primary instruction in public schools was 356,846; in subventioned private schools, 51,085; in non-subventioned private schools, 8999; total, 416,930 (214,361 males, 202,569 females). Pupils receiving primary instruction increased from 355,869 in 1912 to 393,306 in 1914 and 416,930 in 1916. Average attendance in the public primary schools increased from 169,739 in 1912 to 190,469 in 1914 and 208,246 in 1916. Public primary schools in 1916 numbered 2927, with 6365 teachers. In 1916, the number of persons who received secondary instruction in public schools was 16,835; in subventioned private schools, 10,755; in non-subventioned private schools, 8133; total, 35,723, as compared with 30,265 in 1912. In 1916, public lycées for males numbered 42, with 832 teachers and 16,435 students (including 5911 preparatory); public lycées for females, 44, with 725 teachers and 11,816 students (of whom 5505 preparatory); 9 seminaries, with 1923 students (of whom 635 preparatory); 78 subventioned secondary schools, with 10,451 students; 46 non-subventioned secondary schools, with 558 teachers and 8133 students. There are also normal, commercial, technical, and professional schools. There are two universities, the government University of Chile and the Catholic University, which in 1915 had over 4300 students. In 1916 the University of Chile conferred 1103 degrees. The National Library in 1916 contained 206,773 volumes. The state religion is Roman Catholicism, but the public exercise of other forms of worship is permitted.

Production. In 1916, farm land aggregated 13,303,706 hectares. Land planted to crops amounted to 689,214 hectares, of which 597,483 hectares under cereals, 58,889 under legumes, 31,890 under potatoes; in artificially sown meadow, 1,720,215 hectares; under vines, 56,227. Yields in metric quintals in 1915 and 1916 respectively: Wheat, 5,170,973 and 5,493,149; rye, 47,063 and 47,428; barley, 833,283 and 948,818; oats, 1,031,156 and 921,777; corn, 467,841 and 398,863; beans, 511,342 and 520,923; vetches, 99,940 and 117,712; chick peas, 14,584 and 12,808; lentils, 13,768 and 9694; potatoes, 2,597,964 and 3,156,512. Live stock in 1916: horses, 442,642; asses, 36,561; mules, 39,313; cattle, 1,869,053; sheep, 4,557,800; goats, 385,941; swine, 258,025; llamas, 26,600; alpacas, 14,856. Of the sheep, 2,061,998 were in the Territory of Magallanes; of the llamas, 18,326, and of the alpacas, 14,698, in the Province of Tacna.

Chile's prosperity is due in considerable degree to the exploitation of her enormous deposits of sodium nitrate, the export tax on which provides a large part of the national revenue. In 1915 the value of copper produced was only about 22 per cent of that of the nitrate, but copper stands second in importance. Next is coal, but the output falls considerably short of the domestic demand. Large deposits of iron ore await development. The mineral output of Chile was valued in 1911 at 329,788,655 pesos gold; in 1912, 372,662,774; in 1913, 393,504,215; in 1914, 353,702,700; in 1915, 297,946,395. Values of the principal minerals produced, in thousands of pesos gold, in 1914 and 1915 respectively: nitrate, 283,286 and 201,858; copper, 31,441 and 44,287; coal, 21,739 and 29,289; iodine, 5745 and 11,739; iron, 1270 and 2942; borate, 4467 and 2082; sulphur, 1201 and 1172; salt, 868 and 1059; silver, 1197 and 1006; gold, 556 and 813. Chilean copper output, in metric tons representing fine metal: in 1900, 27,715; in 1905, 29,126; in 1910, 38,232; in 1914, 44,665; in 1915, 52,341. Figures for the great nitrate industry are given below, showing the number of workmen and the production and exportation in metric tons:

	Workmen	*Production*	*Exportation*
1900	19,672	1,507,788	1,465,935
1905	....	1,754,605	1,650,363
1910	43,533	2,465,415	2,335,941
1911	43,876	2,521,028	2,449,515
1912	47,800	2,585,850	2,493,082
1913	53,161	2,772,254	2,738,339
1914	43,979	2,463,356	1,846,788
1915	43,506	1,755,291	2,023,294

Nitrate is obtained in the arid northern part of the country. Production by districts in 1915, in metric tons: Pisagua, 257,235; Tarapacá, 362,983; Tocopilla, 200,706; Antofagasta, 797,733; Taltal, 136,634.

Commerce. Below are shown the values of imports and exports (including coin and bullion), in thousands of pesos gold. The gold peso is worth 18d. sterling, or approximately 36.5 cents.

	1910	*1913*	*1914*	*1915*	*1916*
Imports ..	297,486	329,518	269,757	153,212	222,521
Exports ..	328,827	369,310	299,675	327,479	513,585

The great war caused a sharp decline in trade through the suspension of Chile's credit in Europe and the destruction of important markets. Recovery, however, was noted in the figures for 1916, especially for exports, which surpass those of any previous year. There was a notable increase in nitrate and bar copper. The principal imports include textile products, machinery, tools, apparatus, oils, coal, provisions, etc. Imports of raw and partly manufactured materials were valued at 40,363,177 pesos in 1915 and 48,954,996 pesos in 1916; manufactures, 111,814,656 and 173,535,289; coin and bullion, 1,035,724 and 30,543; total, 153,211,557 and 222,520,828. Exports of raw and partly manufactured materials, 17,978,261 pesos in 1915 and 16,560,700 pesos in 1916; manufactures, 326,902,028 and 512,493,550; coin and bullion, 577,130 and 1,091,194; total, 327,479,158 and 513,584,744. Principal exports of domestic produce are shown below in metric tons and thousands of pesos:

	1915		*1916*	
	Tons	*1,000 pesos*	*Tons*	*1,000 pesos*
Nitrate	2,023,294	282,679	2,980,278	338,529
Copper	53,587	45,410	71,904	86,640
Iodine	709	11,789	1,328	21,628
Wool	14,205	13,011	18,981	18,768
Hides and skins	......	6,262	......	5,440
Frozen meat...	15,880	7,192	20,906	12,260
Beans	3,124	874	13,624	3,434
Oats	106,140	9,713	64,039	4,065
Barley	82,602	3,080	15,749	1,724
Wheat	491	84	10,583	1,157
Silver *	30,524	1,203	25,774	1,119
Borate of lime..	16,124	1,506	11,624	775
Nuts	1,995	1,029	2,800	1,113
Leather, etc....	......	834	......	1,053

* Quantities in kilograms.

Trade by principal countries, in thousands of pesos gold:

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
United States.......	51,064	94,408	137,873	252,474
United Kingdom....	36,462	54,930	112,466	133,076
Peru	18,048	15,360	1,009	3,624
British India.......	7,617	12,469	.....	.....
France	4,659	9,486	9,753	38,660
Argentina	6,731	6,885	5,402	8,227
Spain	2,022	5,569	4,488	4,307
Italy	4,748	4,801	4,691	5,205
Brazil	3,235	3,106	30	79
Portugal	139	258	1,920	526
Netherlands	444	968	3,955	6,617
Bolivia	279	547	2,100	5,266
Egypt	13	72	6,543	904

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
Denmark	1,206	1,206	4,162	3,888
Japan	959	1,617	4,876	3,861
Germany	9,818	1,240	.....	.....
Total, incl. others	153,212	222,521	327,479	513,584

COMMUNICATIONS. The length of Chilean railway in 1915 was 8216 kilometres (5105 miles), according to the official *Sinópsis estadística de la República de Chile*, published at Santiago in 1917. Railway development has been as follows, in kilometres:

	1900	*1905*	*1910*	*1914*	*1915*
State	2,125	2,329	2,830	5,072	5,122
Private	2,229	2,449	3,114	3,075	3,094
Total	4,354	4,778	5,944	8,147	8,216

In 1916, the greatest length of railway was in the province of Antofagasta, with 2060 kilometres: Atacama, 1080; Tarapacá, 874; Coquimbo, 671. Capital invested in railways in 1915: private lines: Chilean, 19,609,842 pesos gold; British, 223,992,893; German, 1,145,833; total private, 244,748,568; state lines, 348,396,271; grand total, 593,144,839, as compared with 310,615,690 in 1910.

FINANCE. The monetary unit is the peso: its par value is 18d. sterling, or approximately 36.5 cents. In the spring of 1917, the Congress enacted a law postponing the conversion of legal tender paper money until January 1, 1919. The paper peso fluctuates in value; in 1915 and 1916 it was about 14 cents; in 1917 it increased, so that on October 31 the exchange rate was approximately 29.6 cents. Revenue and expenditure, excluding receipts and disbursements on account of the state railways, have been as follows, in thousands of pesos gold:

	1901	*1906*	*1911*	*1914*	*1915*	*1916*
Rev.	91,788	146,572	165,845	139,389	128,168	183,468
Exp.	103,328	119,128	153,171	153,559	131,840	150,749

Revenues and expenses of the state railways are shown below, in thousands of pesos gold:

	1901	*1906*	*1911*	*1914*	*1915*	*1916*
Rev.	14,659	19,809	32,357	32,294	37,386	38,957
Exp.	16,810	22,648	39,718	38,703	32,648	38,542

Details (excluding railways) of revenue and expenditure, in thousands of pesos gold:

	1914	*1915*	*1916*
Revenue:			
Import duties	41,332	21,832	37,083
Export duties	66,548	68,727	102,729
Direct taxes	2,550	13,656	9,020
Indirect taxes	5,580	5,710	6,825
Public services	3,055	2,836	3,776
Other ordinary	15,927	10,521	8,269
Extraordinary	4,398	4,885	15,767
Total	139,389	128,168	183,468
Expenditure:			
Interior	23,750	20,415	24,625
Foreign affairs	3,755	3,047	3,675
Justice	5,392	4,362	6,090
Public instruction	19,309	15,514	17,992
Finance	46,396	45,499	49,919
War	21,537	19,651	23,169
Marine	17,363	13,381	16,287
Industry & public works	16,056	9,972	8,992
Total	153,559	131,840	150,749

Estimated expenditure for 1917: 193,432,264 pesos paper and 69,635,281 pesos gold. The budget for 1918, as submitted to the Congress, showed an estimated expenditure of 191,585,100 pesos paper and 46,141,800 pesos gold. The foreign debt on December 31, 1916, stood at 429,626,600 pesos gold; internal debt, 42,708,193 pesos paper; paper money in circulation, face value, 177,980,119 pesos.

NAVY. The Chilean navy includes: 2 old battleships, the *Capitán Prat* (1892), of about 7000 tons, and the *O'Higgins* (1897), of 8500 tons; 1 armored cruiser, the *Esmeralda* (1896), of 7000 tons; 4 protected cruisers (1890-99), aggregating 14,500 tons; various small and auxiliary craft, including several destroyers and torpedo boats. Personnel, about 6000 officers and men.

GOVERNMENT. The legislative power is exercised by a congress of two houses, the Senate and the Chamber of Deputies. Senators (37 in number) are elected for six years and deputies (118) for three years by direct vote. The executive authority is vested in a president, who is elected by indirect vote for five years and is ineligible for the next term. The president is assisted by a council of state and a cabinet. The president in 1917 was Juan Luis Sanfuentes, who was inaugurated December 23, 1915, in succession to Ramón Barros Luco.

HISTORY. To the suggestion of President Wilson that all neutrals should break off relations with Germany Chile replied on February 9 that it had already expressed its view in a note to the German government declaring that the blockade was against neutral rights, that Chile could not agree and reserved the right to protest against violations of international law. Later when Chile received inquiries from the United States and Cuba as to the existence of a state of war with Germany the Chilean government replied on April 10 that it was its intention to observe strict neutrality. On April 9 it was announced that an eruption of the volcano Calbuco, near the city of Puerto Montt, had taken place, causing great devastation in the farming country and killing many herds of cattle.

CHINA. The Chinese Empire was succeeded by the Chinese Republic when, on February 12, 1912, by an edict of the Empress Dowager, Tsu Hsi An, the infant emperor, Pu-yi, abdicated the throne and brought the Manchu dynasty to an end. The dynasty dated from 1644. Pu-yi, who was permitted to retain the title of Manchu Emperor, was born February 11, 1906, nephew of the Emperor Kuang-hsü. The duties of president of the new republic were performed by Yuan Shih-kai, who on October 6, 1913, was regularly elected president by the Chinese Parliament. Yuan died June 6, 1916, and was succeeded by the vice-president, Li Yuan-hung. Peking, the seat of the former Imperial government, is the capital of the republic.

AREA AND POPULATION. The republic includes: China proper, "the eighteen provinces;" Manchuria, "the three eastern provinces;" Sinkiang (which includes East Turkestan), the new province," or "the new dominion"; Inner Mongolia; Outer Mongolia, the autonomy of which has been recognized since October, 1913; Tibet, including Koko-Nor and Tsaidam. Only a variable authority is exercised by the Peking government in Inner Mongolia and Tibet. In November, 1917, it was announced that the government had under consideration the redefinition of the frontiers. The following proposals were made: To appoint a special mission to effect a proper boundary between Manchuria and Korea; to negotiate with the Portuguese concerning the boundary of Macao; to dispatch an agent to decide the proper boundary between Inner Mongolia and Outer Mongolia.

Various estimates or enumerations of the populations dwelling within the limits of the republic have been made under governmental authority, but with so complete an ignorance of statistical method that they command little confidence. In China proper the population seems to be increasing very slowly or perhaps not at all. Below are shown the estimated areas and the number of inhabitants as calculated from the 1910 enumeration of households:

	Sq. miles	*Population*
China proper	1,532,789	* 302,111,334
Manchuria	362,483	* 12,742,360
Sinkiang	550,579	* 1,768,560
Tibetan marches (of Szechwan and Yunnan)	.....	195,496
Children under six years (estimated)	.....	9,000,000
Total provinces	2,445,851	325,817,750
Mongolia	1,076,292	† 1,800,000
Tibet (incl. Koko-Nor and Tsaidam)	756,000	† 2.000,000
Grand total	4,278,143	329,617,750

* Not including children under six years.
† Estimate.

The total area stated above is about 141 per cent of continental United States (excluding Alaska); the area given for China proper is about 50 per cent of that of the United States. Much uncertainty exists with respect to the size of Chinese cities. A calculation based on the 1910 enumeration gave Peking about 821,000 inhabitants; but, according to the reported results of a 1912 enumeration, the inhabitants numbered only about 692,500. Estimated population of some of the larger treaty ports: Hankow, 1,321,000; Canton, 900,000; Tientsin, 800,000; Chungking, 702,000; Shanghai, 651,000; Foochow, 624,000; Soochow, 500,000; Ningpo, 455,000; Nanking, 377,000; Changsha, 250,000; Chinkiang, 186,000; Amoy, 114,000. The estimated number of foreigners resident at the treaty ports in 1915 was 182,404, including 101,589 Japanese, 56,230 Russians, 8641 British, 4716 Americans, 3740 Germans, 3300 Portuguese, and 1649 French.

RELIGION AND EDUCATION. Most of the Chinese are either Confucianists, Taoists, or Buddhists, but virtually all of the people practice ancestor worship. Under the republic no ecclesiastical hierarchy is maintained, but Confucianism is the basis of ethical teaching in the educational system. The Moslem population numbers between 5,000,000 and 10,000,000. Roman Catholic natives at the end of 1916 were reported at 1,790,220; Protestant natives in 1915, 526,108; Orthodox natives at the end of 1915, 5587.

In 1905 the government undertook the gradual introduction of western learning, with the result that the traditional education in the Chinese classics is being widely superseded by more practical instruction. The Government University at Peking, established in 1909, has about 1500 students (including students in the preparatory department), with 90 teachers. Also at Peking is the important Union Medical College. Tientsin has a university, an Anglo-Chinese college, and several special schools. There are numerous Roman Catholic and Protestant mission schools in various parts of the country. Educational institutions of all kinds are estimated at about 58,000, with upwards of 1,600,000 pupils and students enrolled.

INDUSTRIES. China proper is primarily an agricultural country. Holdings are small, irrigation is common, cultivation is intensive. but the implements used are primitive. The cultivation of fruits and vegetables has reached a high degree of excellence. The principal crops, in the north, include wheat, barley, corn, millet, and other cereals, and beans and peas; in the south, rice, sugar-cane, indigo, and cotton. Also in the south and west important products are tea and silk cocoons, the latter being produced to some extent in all the provinces. The staple product of Manchuria is the soy bean, of which in 1915 614,250 tons were exported as beans and 695,600 tons as bean cake.

Mining has not been highly developed, but the mineral resources are rich and abundant. China is one of the first coal countries in the world in respect of coal deposits, which are found in most of the provinces. The coal output in 1915 was 18,000,000 tons. The most important mineral export is tin, which is mined in Yunnan. Iron is abundant in many localities; the deposits which are worked near Hankow are among the richest in the world. Copper is mined in Yunnan, antimony in Hunan. Other minerals produced are gold, silver, lead, zinc, salt, and petroleum.

The leading manufactures are cotton, silk, and woolen goods. Modern methods of manufacture have been introduced. There is some manufacture of iron and steel, especially at Hanyang, near Hankow. At various places modern flour and rice mills have been erected.

COMMERCE. The Chinese foreign trade is reported in haikwan taels. The haikwan tael had an average value of about 65 cents in 1911, 74 cents in 1912, 73 cents in 1913, 67 cents in 1914, 62 cents in 1915, and 83 cents in 1916. The haikwan tael is not a coin, but a unit of weight, and its value fluctuates with the price of silver. In 1916 its value advanced to about 83 cents and by October 1, 1917, to $1.1851. Total imports and domestic exports (that is, exports of Chinese produce) have been valued as follows, in thousands of haikwan taels (coin and bullion excluded):

	1911	*1912*	*1913*	*1914*	*1915*
Imports	482,576	485,726	586,290	584,209	477,064
Exports	377,838	370,520	403,306	356,227	418,861

The most important group of imports into China are textile goods, which in 1915 were valued at hk. tls. 157,482,394; of this amount, hk. tls. 151,437,267 represented cotton goods, including cotton yarn to the value of hk. tls. 67,223,008. Other of the principal imports into China were as follows in 1914 and 1915 respectively, in thousands of haikwan taels: sugar, 31,040 and 29,912; kerosene, 35,119 and 28,027; cereals, 22,349 and 25,695 (chiefly rice and paddy, 22,097 and 25,342); opium, 42,663 and

25,644; metals, 21,191 in 1915 (of which iron and steel 10,990); fishery products, 13,371 and 14,926; cigarettes, 13,704 and 12,235; coal, 9072 and 8416; dyes, colors, and paints, 15,944 and 7256; raw cotton, 2904 and 6874; bags, 3883 and 6427; paper, 6725 and 6376; leather, 6031 and 5586; matches, 5637 and 5284; tea, 5465 and 5243; machinery, 8766 and 4829; clothing, 4849 and 3808; ginseng, 2386 and 3854; medicines, 4271 and 3793; vehicles, 6544 and 3738; timber, 6430 and 3501; railway materials, 6639 and 3468; beans, peas, etc., 2251 and 3325; bran, 2729 and 2989; spirits, wine and beer, 3051 and 2971; soap, 2580 and 2341; electrical apparatus, 2794 and 2085; flour, 9262 and 834.

Principal exports of Chinese produce in 1914 and 1915 respectively, valued in thousands of haikwan taels: raw silk and waste, 62,919 and 78,407; tea, 36,363 and 55,538; silk goods, 16,972 and 22,393; undressed skins and hides, 21,431; bean cake, 22,022 and 20,706; beans, 25,180 and 20,219; vegetable oils, 13,686 and 16,583; seeds, 11,694 and 16,249; raw cotton, 12,715 and 13,700; raw wool, 6715 and 11,129; slab tin, 7979 and 9247; cereals, 7374 and 7679; coal, 8974 and 6074; live animals, 6047 and 5483; bristles, 4440 and 4875; egg albumen and yolk, 2870 and 4865; meats, 3763 and 4330; paper, 2865 and 4261; fibres (hemp, jute, ramia), 2712 and 3630; medicines, 2806 and 3176; tallow (animal and vegetable), 3468 and 3124; straw braid, 3080 and 2863; mats and matting, 3329 and 2776; fire crackers and fire works, 2436 and 2354; groundnuts, 5064 and 2126; grass cloth, 1423 and 1319.

The table below shows some of the leading exports in 1914, 1915, and 1916 by quantity, the figures representing metric quintals:

	1914	*1915*	*1916*
Beans, black	68,282	94,779	40,066
Beans, green	116,987	158,452	181,190
Beans, white	32,964	64,377	71,234
Beans, yellow	5,205,700	6,187,846	4,069,822
Beans, other	1,324,013	591,567	953,012
Ground nuts	709,776	331,450	887,965
Rapeseed	529,342	659,923	377,217
Sesamum	756,376	1,389,336	941,918
Linseed	112,795	92,477	122,417
Cottonseed	148,617	342,231	225,517
Bran cake	6,510,454	7,008,819	7,034,459
Bean oil	367,238	615,364	946,476
Ground-nut oil	155,455	212,854	399,451
Nutgalls	35,505	30,467	28,454
Indigo, liquid	1,094	797	1,437
Tallow	84,050	68,696	184,988
Vegetable tallow	114,918	109,711	155,340
Meat	114,508	141,921	209,591
Ham	6,181	6,342	5,718
Lard	45,089	51,624	58,056
Egg albumen and yolk	79,893	115,445	174,314
Wool	189,128	234,545	210,114
Raw silk	54,907	65,950	62,606
Raw silk, wild	12,739	20,536	11,294

Total imports and exports of Chinese produce by countries have been as follows, in thousands of haikwan taels:

	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
Hongkong	167,994	148,436	94,429	104,170
Japan	127,120	120,250	64,616	77,677
United Kingdom	105,208	71,557	22,577	81,985
British India	39,149	40,753	6,777	7,943
United States	41,232	37,043	40,213	60,579
Russia	22,275	17,027	43,339	59,399
Dutch East Indies	6,594	6,727	2,922	2,736
Korea	4,501	6,446	5,012	5,659
Straits Settlements	7,664	5,381	6,969	8,893
Macao	5,940	5,247	4,216	4,950
Philippine Islands	1,944	3,644	1,151	788
Belgium	17,940	3,465	6,546	5,441
France	4,951	2,431	25,591	30,471
Fr. Indo-China	5,618	3,250	1,808	1,774
Siam	99	506	2,230	3,115
Italy	778	414	5,766	9,341
Germany	16,697	160	12,063	.....
Austria-Hungary	2,293	73	1,267	.....
Total, incl. others	584,209	477,064	356,227	418,861

Shipping. Vessels entered and cleared at Chinese ports in 1915 numbered 206,887, of 90,663,005 tons, as compared with 219,649, of 96,326,267 tons in 1914. Of the 1915 shipping, steamers numbered 103,963, of 84,641,227 tons, and sail 102,924, of 6,021,778 tons. Under the Chinese flag were 141,965 vessels, of 24,159,009 tons; British, 33,339, of 37,675,657 tons; Japanese, 20,141, of 23,873,016 tons; American, 3148, of 804,414 tons; French, 537, of 561,955 tons. In the direct foreign trade, there were entered in 1915 37,599 vessels, of 12,023,320 tons, and cleared 35,617 vessels, of 12,100,590 tons. Of the tonnage entered in the direct foreign trade, British aggregated 4,241,367, Japanese 3,839,336, Chinese 2,613,947.

Communications. In China proper, roads are numerous and, though most of them are in poor condition, they carry a large internal trade. More important commercially than the roads are the many canals and navigable rivers. The reported length of railway in operation at the beginning of 1914 was 9596 kilometres (5963 miles), including the railways in Manchuria; under construction, 3660 kilometres (2274 miles). During 1917 the American surveyors were engaged in preparing plans for 1500 miles of railway through the richest section of China; especially the provinces of Szechuen, Hunan, and Chihli made considerable progress. A reconnoissance of 1090 miles and the preliminary survey of 540 miles were made on the Chouchiakou-Hsiangyang line from Chouchiakou in Hunan to Hanchungfu in Shensi. The survey was later extended to Chengtu to determine whether the provinces of Szechuen with an estimated population of 70,000,000 could be tapped. The survey of the Chuchow-Chinchow line designed to open up the rich mining territory was completed with 994 reconnoissance miles and 503 preliminary miles, making for the twelve projects, a total of 2084 reconnoissance and 1043 preliminary miles actually surveyed. These lines, when constructed, would be the first to be built west of Peking-Hankow and Hankow-Canton Railways, and would open up six new provinces to foreign trade.

The telegraph system, which is under government control, is well developed, connecting the principal cities with each other and with neighboring countries. The reported length of line at the end of 1914 was 36,339 miles, with 49,963 miles of wire; offices, 561. Wireless telegraphy has been installed, including stations at Peking, Kalgan, Hankow, Shanghai, Nanking, and Canton. The postal system extends over China proper, Manchuria, and Sinkiang. Post offices in 1915, 8511.

Finance. The monetary unit is the silver dollar (yuan). It is equivalent to .644 plus of the haikwan tael. The haikwan tael, or customs tael, is somewhat heavier than various local taels. The value of the haikwan tael, which fluctuates with the price of silver, was $1.1851 on October 1, 1917; that of the dollar, 76.32 cents. The taels are not coins, but units of weight and hence of value. Current in China are the British and Hongkong silver dollars, valued on October 1, 1917, at 76.60 cents, and the Mexican silver dollar, valued at 77.17 cents.

For the year ending June 30, 1917, the budget balanced at 472,838,584 taels. Estimated revenue: land tax, 90,115,784 taels; customs duties, 73,056,663; salt tax, 96,767,010; tax on merchandise, 42,719,194; total ordinary revenue (including miscellaneous taxes), 388,009,660; extraordinary revenue, 84,828,924; grand total, 472,838,584. The larger estimated disbursements for the fiscal year 1917: war, 156,606,047 taels; finance, 61,792,970; interior, 42,570,109. The total estimated ordinary expenditure was 291,803,470 taels; extraordinary, 181,035,114. Foreign debt December 31, 1916, £171,906,000, of which £157,617,000 was owed by the central government and £14,289,000 by provincial governments.

NAVY. The Chinese navy includes: One protected cruiser, the *Hai Chai* (1898), 4300 tons, 24 knots; 3 protected cruisers, the *Hai Yung* (1897), *Hai Chen* (1897), and *Hai Sheu* (1898), each 3000 tons and 19.5 knots; 2 protected cruisers, the *Ying Swei* (1912) and *Chao Ho* (1912), each 2600 tons and 20 knots and especially adapted for the training of cadets; several sea-going gun vessels and various small craft, much of it antiquated and unserviceable. The Chinese dockyards are inadequate, and there are no naval bases of importance.

GOVERNMENT. The legislative authority is exercised by a parliament of two houses, the Senate (264 members) and the House of Representatives (596 members). The executive authority rests with a president, who is assisted by a cabinet of nine members. The premier is nominated by the president, other ministers by the premier, all appointments requiring ratification by the Parliament. President in 1917, Li Yuan-hung, till July 6, and after that Feng Kwo-chang.

HISTORY.

THE BREAK WITH GERMANY. After Germany resumed unrestricted submarine warfare China issued a protest on February 9 saying that if it was not regarded diplomatic relations would be broken off. After the United States broke off relations with Germany, China began to discuss a similar action and on March 14 handed the German ambassador his passports. China demanded of the Entente Allies and the United States the suspension of the Boxer indemnities which amounted to $30,000,000 a year and would last until 1940, the consent of the powers to the increase of her import duties which under the treaty could not exceed 5 per cent ad valorem, and their consent to the posting of troops at Tientsin, on the Tientsin-Peking railway, and in the neighborhood of the legations. The Allies had already promised a part of these concessions. They were anxious that China should go into the war, not to take part in the fighting, but to supply a reserve of men. China had already contributed about 100,000 laborers and farm hands to the Entente man-power, for the most part in France, and it was the drowning of some of them on their way over on board the *Athos* and other boats that led to the first protest against the German methods.

The rupture of relations with Germany was not carried out without some difficulty. In the first place, on March 4, when the cabinet had decided that China should follow the example of the United States, the president refused to approve this action; thereupon the prime minister, Tuan Chi-jui resigned, accompanied by several other members of the ministry. Parliament was nearly unanimous in support of the cabinet and the vice-president supported it also. The president, Li Yuan-hung, appealed to the article of the Constitution which declared that the provisional president with the consent of the national council should have power to declare war and conclude treaties. Soon afterwards, however, the president consented to the cabinet's having full power in the matter of foreign policy. The prime minister thereupon returned to office, and when the subject came up in the House on March 10 (the German reply which was received on that date, being unsatisfactory) the vote for breaking off relations was 431 to 87 and in the Senate, on the following day, 152 to 37. After the breaking off of relations China seized all the merchant ships in Shanghai, placing armed guards on the vessels. They found evidence of an intention to destroy them.

The question of declaring war against Germany now arose, and there was extended discussion of it in parliament. Finally the government appointed a special commission for international affairs to report on the subject. This decided in favor of China's entry into the war and the question was now to go before parliament. A secret session was held on May 9 and a resolution for declaring war was referred to a standing committee. The prime minister urged parliament to pass the measure. It was the subject of heated debate, for a considerable opposition had formed against it on the ground mainly that war ought not to be entered into until the cabinet had been reorganized and strengthened. After a stormy session the House of Representatives on May 11 refused to pass the resolution. A mob gathered around the parliament building and threatened violence until dispersed by the troops. On May 19 the House of Representatives, by a vote of 229 to 180, decided not to consider any war measure until after the resignation of the prime minister and the reorganization of the cabinet. A deadlock followed on the war question both in the House and in the Senate. Both in and out of parliament there was a strong demand for the resignation of the prime minister, who, it was feared, would take advantage of the war to violate the constitution and place the power in the hands of the Conservative Military party. On the other hand, the military governors throughout the country objected to his dismissal.

IMPERIALIST REVOLT. On May 29 it was announced that the military governors of several provinces had declared their independence of the central government. On May 31 it was learned that rebel forces had risen in Anhui and that General Chang Hsun was in control of the Tientsin-Pukow railway. The provinces reported to be in revolt were as follows: Sinkiang, or Eastern Turkestan; Fukien, in the southeastern part of the county; Kiangsi, to the east of Sinkiang; Shensi, in central China; Honan, in central-eastern China; Anhui; Shantung; and Chekiang. On June 2 General Chang Hsun set up a provisional government at Tientsin and demanded the dismissal of Parliament, and the pardon of the monarchists who had been condemned. These conditions were accepted by the president of the republic on June 20. Ten days later Li-King-Li, in accord with General Chang Hsun, assumed the presidency of the council. The president of the republic, having refused to resign (July 3), was obliged to take refuge in the Japanese legation. Meanwhile, on July 1, the restoration of the Manchu dynasty was declared and the young emperor (Hsuan-Tung) was informed that he had succeeded to the throne. In Peking this passed off quietly. The edict announcing the restoration guaranteed a constitutional monarchy, non-interference of the dynasty in politics, recognition of foreign treaties and loans, and abolition of certain taxes imposed under the republic; forbade the establishment of political parties; and issued an amnesty to political offenders.

Soon after came the report that government forces were within a short distance from Peking and that the movement against the restoration of the Manchus was rapidly developing. On July 7 it was announced that the emperor had abdicated. By that time the Republicans appeared to be holding all the important military positions on the outskirts of the city. General Chang Hsun's troops, who were only slightly aided by the regular army, retired from Peking without fighting. At the same time it was announced that Chang Hsun had retired from all the offices held by him. General Feng Kwo-Cheng, who had been elected president on July 6, marched on Peking, surrounded the remaining insurgents and overthrew the new imperial government, July 8-12. General Chang Hsun took refuge in the Dutch legation.

The attempt to overthrow the republic and restore the Imperial government had utterly failed, but there was much disorganization among the republicans themselves who were taken by surprise by the counter-revolution and who found difficulty in reëstablishing order. It was said that Germany had been behind this counter-revolution but this was not established. What seemed to be more certain was that the movement was not an isolated one but was connected with international affairs, especially with the relation between the United States and Japan and with the Russian revolution.

War Declared Against Germany. The Chinese declaration of war against Germany which had been checked by the constitutional crisis and the attempt to restore the monarchy was unanimously decided by the cabinet and approved by the acting president on August 5.

Miscellaneous. It was reported on January 10 that serious friction existed between China and Russia on account of the killing by Cossacks of seven hundred Chinese in the interior of the province of Sinkiang. Demands were presented by the Chinese government for an indemnity to the families of the victims and apologies and guarantees for the future. On January 16 it was announced that a compromise had been reached in the Tientsin concession dispute with France, providing for the restoration by the French to China of the territory in question and on China's part an agreement to make the district an international region open to all the treaty powers. The news of the settlement of the dispute between China and Japan over the Cheng-Chiatun affair, noted in the preceding Year Book, was made public on February 21.

On January 5 the loan agreement which was placed in the United States for $5,000,000 was announced. This was secured on the revenue from the government sale of wine and tobacco and was to be used for industrial development including national improvement and the increase of reserve and for specie payment of the Bank of China and the Bank of Communications. An announcement was also made on January 19 that Japanese banks had agreed with the Bank of Communications for a loan of $5,000,000 in silver to be secured by bank notes and bonds. In March the loan for $100,000,000 to the Chinese government for railway and other internal improvements which had been broken off several years before on account of President Wilson's withdrawal of government support from the American group was again under discussion and negotiations were reopened by syndicated banks representing the United States, Great Britain, France, Russia, and Japan. Further reports of loans were also circulated in March. According to figures published in the press the amount of German capital invested in Chinese enterprises was estimated at $256,760,000. The number of German companies interested was said to be 244. The Germans had opened several mines in China. A considerable amount of railway mileage was in their hands and they had contracted to build other lines. On August 29 an agreement was signed by a group of Japanese financiers for the advance to China of 10,000,000 yen (about five million dollars) for general administration purposes. The advance was secured on the salt duties. In 1914 a group of banks, or *consortium*, representing British, French, Russian, Japanese, and German institutions, made a Reorganization Loan Agreement with China amounting to £25,000,000. The German institution dropped out as the result of China's declaration of war. Japan advanced the money above mentioned against the second Reorganization Loan which was to be associated with the *consortium*. The terms were more favorable than any China had recently received.

Cabinet Change. In the latter part of November the cabinet resigned and a new ministry was chosen under Wang Shih-cheng as acting prime minister. The crisis resulted from differences among the northern military leaders. Under the former prime minister the southern provinces had put an insurgent force into the field in Hunan and had defeated the government forces. Thereupon the prime minister had resigned. See War of the Nations, *Diplomacy of the War*.

CHING, Prince. A Chinese public official, died January 31, 1917, at Tientsin. He was born at Peking in 1839, and was adopted when a young boy by the Emperor Chien Lung, who gave him all the rights of royalty. Upon the death of the emperor, Kuang-sü, in 1908, he became a hereditary prince of the first order. For many years, supported by the Dowager Empress, whose favorite he was, Prince Ching held offices that were powerful partly because of the amount of patronage connected with them. Appointed president of the Board of Foreign Affairs in 1884, he made many blunders of policy, some of which have been credited with helping to bring on the war with Japan. At that crisis, his predecessor, Prince Kung, was recalled to power. With Li Hung Chang he was associated in representing China in peace negotiations after the Boxer outbreak. He was afterward president of the ministry for two years and then of the grand council, and held other important posts of control over the army and navy till the abdication of the Manchus in 1912 forced his retirement from a long and corrupt career in public life.

CHITTENDEN, HIRAM MARTIN. An American soldier, died October 9, 1917, at Seattle, Wash. He was born in western New York in 1858 and graduated from the United States Military Academy in 1884. During the next fourteen years he was promoted through various grades to be lieutenant colonel of volunteers and chief engineer of the Fourth Army Corps. His contingent was held in readiness for the Spanish-American War in 1898, but was never called. He had directed large governmental engineering enterprises in Yellowstone National Park and on the Missouri, Ohio, and other western rivers. In 1910 he retired as brigadier general and in 1911 he was appointed commissioner of the port of Seattle, which position he resigned in 1915 on account of ill health. He published *Yellowstone National Park, Historical and Descriptive* (1895; 6th ed., 1913); *Reservoirs in the Arid Regions* (1897); *Forests and Reservoirs in Their Relation to Stream Flow* (1908); *War or Peace* (1911); *Report on the Water-Supply System of the Spring Valley Water Company* (1912).

CHLORINATION. See WATER WORKS AND WATER PURIFICATION.

CHOATE, JOSEPH HODGES. A distinguished American lawyer and diplomat, died in New York, May 14, 1917. He was born in Salem, Mass., January 24, 1832. His father was Dr. George Choate, a physician and member of the Massachusetts legislature (General Court), and his mother was Margaret Manning Hodges before her marriage. On both sides he came of distinguished old Colonial stock. The Choates, in particular, were marked by oratorical ability. It was a thrust at his own ancestors when Joseph H. Choate, become a brilliant after-dinner speaker, remarked that although the Pilgrim fathers had much to bear, the Pilgrim mothers had much more, for they had to bear with the Pilgrim fathers. The famous Rufus Choate was a cousin of Dr. George Choate, and the latter's son counted himself fortunate when as a young lawyer he could take to New York an introduction from his noted relative. This was in 1855. He had graduated from the Harvard Law School a year earlier, and in 1852 he had been fourth in the Harvard College class at the head of which stood his elder brother, William Gardner Choate, later also a lawyer. By 1856 Joseph H. Choate had entered the New York office of Butler, Evarts, and Southmayd, a firm which three years later became Evarts, Southmayd, and Choate, and in 1884 Evarts, Choate, and Beaman. These latter three men comprised perhaps the best known group of lawyers in the country, famous for their wit as well as for learning.

Mr. Choate rose to be a great trial lawyer. Possessed of a fine presence, eloquence second to none in his generation, humor that could become deadly irony, remarkable concentration, and a capacity for instant reaction to every significant development in a trial, he added to his physical and intellectual attributes a passion for justice, scorn of the forces of evil, and pity for the oppressed. The news that "Choate is going to speak" would pack a courtroom with admiring young and older lawyers. And it was amazing how often Choate did speak. With confidence that he would win out if any one could, men and corporations put into his hands and those of his partners many of the most notable cases of the time. Outside of criminal law, there was hardly a branch of which he did not make himself master—probate, patent, breach of promise, admiralty, military, corporation, constitutional, international, whatever the cases in hand called for. He handled the Cruger, Vanderbilt, Tilden, Stewart, Hoyt, Drake, Hopkins-Searle, and Leland Stanford will cases. In Feuardent *v.* di Cesnola he successfully defended the genuineness of the Cypriote antiquities in the Metropolitan Museum, but only by making himself into a legal archæologist. He defended the Standard Oil Company and the American Tobacco Company in the suits brought by the government, was attorney in the Chinese Exclusion, California Irrigation, and Massachusetts Fisheries cases, and before the Supreme Court of the United States argued the Texas Trust Law case and successfully attacked the constitutionality of the Income Tax Law of 1894. In 1879, before a special commission appointed by President Hayes, he had presented the cause of General Fitz-John Porter, who had been deprived of his rank in the army by court-martial on charges relating to his conduct at the second battle of Bull Run. Mr. Choate not only established Porter's claims but secured his reinstatement. In another sensational case, the suit against Russell Sage, Mr. Choate was counsel for W. R. Laidlaw, a clerk injured, as he alleged, when Mr. Sage had used him as a screen to save himself from an assassin's tomb. The cross examination of Mr. Sage, afterward described by Choate himself as "skinning an intellectual eel," became famous in the profession.

Long before his death, Mr. Choate gained the distinction he coveted, and the only one he cared about, that of leading advocate of the American bar. He never sought public office, although as a protest against Republican machine politics in the State of New York he was a candidate for the United States Senatorial nomination in 1897 against Thomas C. Platt. The party caucus at Albany gave him just seven votes as against 142 for Platt. Earlier he had been in several anti-Tammany movements, and indeed was chief counsel of the "Committee of Seventy" which accomplished the downfall of Boss Tweed in 1871-72. In 1894 he served as president of the State Constitutional Convention. Long since his fame as an orator and after-dinner speaker had gone through the country. Numberless are the *bon mots* ascribed to him, but every genuine one is characterized by quietly spontaneous humor and easy felicity of phrase. Among his orations those on Lincoln, Farragut, and Rufus Choate are most familiar, and he himself considered the third of these the best.

Outside of the law and as an orator his reputation was hardly more than local until, when he was almost sixty-seven, he was sent by President McKinley to London as American Ambassador. Between 1899 and 1905, when he left England, he had gained the admiration and affection not only of British officialdom but of the British people as well. No other American diplomat had done more to bring to a closer understanding the United States and the country to which he was accredited. He became a prime favorite of Edward VII and charmed the society of the capital by his courtliness, wit, scholarship, and character. His orations on noted Americans, delivered in various parts of Great Britain, went far to reveal and interpret to his hearers the qualities of their cousins across the seas. Oxford, Cambridge, Edinburgh, Glasgow, and St. Andrews were proud to confer on him the honorary doctorate of laws, he was chosen foreign honorary fellow of the Royal Society of Literature, and was created a Bencher of the Middle Temple, the highest honor that his legal brethren could bestow, and one never before received by an American. After his death memorial services were held for him at St. Margaret's, Westminster, and the Temple Church.

Although an old man when he returned to America Mr. Choate at once reëntered active law practice, and active he remained to the day and fairly to the hour of his death, professionally and in the public interest, although latterly retired from the firm of Evarts, Choate, and Sherman, as it became. In 1907 he again represented the United States abroad, as first delegate to the International Peace Conference at The Hague, where his speeches did much to further the practical purposes of the conference. He claimed that the 80's made the best decade of all, and indeed they saw the climax of his life rather than its decline. Since the beginning of the European War he had ardently championed the cause of the Allies, and until the United States entered the war was a critic of the President and the administration. Undoubtedly his death was hastened by his untiring activity as chairman of the mayor's committee for the entertainment in New York of the French and British Commissions. Until their departure he had accompanied General Joffre, M. Viviani, his friend Mr. Balfour, and the other distinguished guests about the city, and had spoken on numerous occasions with a vigor, eloquence, wit, and patriotic fervor that amazed his hearers. Mr. Choate had been president of the American Bar Association, the State Charities Aid Association, the Pilgrims, and the New England Society of New York, honorary president of the National Security League, and vice-president of the American Society for the Judicial Settlement of International Disputes. He was the last survivor of the founders of the American Museum of Natural History. Honorary degrees were conferred on him by Amherst, Harvard, Yale, Williams, Pennsylvania, Union, Toronto, McGill, and Columbia. His orations were collected and published as *Abraham Lincoln and Other Addresses in England* (1910) and *American Addresses* (1911), and some of his briefs, memorials, and other papers have been printed. He left an estate of $3,000,000, largely to his family. See *Life of Joseph H. Choate* by Theron G. Strong (New York, 1917).

CHOLERA. The curative value of replacing by various means (intravenous infusions, hypodermoclysis, enteroclysis, etc.), the tremendous loss of water which is a constant feature of this disease, was shown anew by Tushinsky, of Russia, who treated forty-four children under five years of age with intravenous infusions of salt solution (6.5:1,000), 400 to 2000 c.c. doses being given according to the age of the child. Thirty of the forty-four cases recovered. Of the thirteen fatal cases ten were in the algid stage when first seen. This is a high rate of recovery for young children, in whom the disease is particularly fatal.

CHORAL SOCIETIES. See MUSIC.

CHOSEN. See KOREA.

CHRISTIAN, PRINCE, OF SCHLESWIG-HOLSTEIN. A German prince, member of the royal family of Schleswig-Holstein, of which Duke Günther, only brother of the present German Empress, is the head, died October 28, 1917, in London. He was born in 1831 and in 1866 married Princess Helena, third daughter of Queen Victoria. Prince Albert of Schleswig-Holstein, eldest son of Prince Christian, is heir to Duke Günther, as the latter has no sons. Prince Albert at the outbreak of the European War in 1914 threw in his lot with Germany and became a Prussian officer.

CHRISTIAN ENDEAVOR, UNITED SOCIETY OF. In 1917 a large number of new societies were added to the world organization, making a total of over 78,039 according to incomplete returns. There are over 4,000,000 members belonging to eighty denominations. The international convention that was to have been held in New York City July 4-9, 1917, was indefinitely postponed, and no complete official report for that year was issued. The statistics for the United States and Canada, for the two years ending July 1, 1917, showed that in that time 8206 new societies were organized, and more than 718,435 new members were enrolled. The total number of Christian Endeavor societies actually enrolled in 1917 at Boston, the society's headquarters, was 78,039, and the number was believed to exceed this. Of this total, 52,462 societies were in the United States, 4094 in Canada, and 21,483 in foreign lands. Conservative estimates convinced the authorities of the society that if complete reports were available for the world, at least 10,000 new societies were organized and more than 1,200,000 new members were added during the two years ending July 1, 1917. The society had loyally adapted its programme to war needs, and a model constitution for army and navy Christian Endeavor societies was established. Publications of the society were distributed to soldiers. A special enlistment-pledge of Christian Endeavorers and their friends also was prepared. The officers in 1917 were: President, Rev. Dr. Francis E. Clark; William Shaw, general secretary; A. J. Shartle, treasurer and publication manager.

CHRISTIANS. This denomination had in 1917 approximately 115,000 communicants, 1450 churches and 1120 ministers. The administrative body of the church is the American Christian Convention, which is made up mostly of delegates from the conferences. The denomination maintains several schools and colleges, the most important of which are the Union Christian College in Indiana, Defiance College in Ohio, Starkey Seminary in New York, Elon College and Franklinton Christian College (colored) in North Carolina, Palmer College and Weaubleau College in Missouri, and Jireh College in Wyoming. It has also a theological school, the Christian Biblical Institute, in Ohio. Missions are conducted in Japan, Porto Rico, continental United States and Canada.

CHRISTIAN SCIENCE. A year of great growth in the Christian Science movement was reported at the twenty-second annual business meeting of The First Church of Christ, Scientist, the Mother Church, held in Boston on June 4, 1917. The names of the officers for the ensuing year were read by Mr. McKenzie, the retiring president. They were as follows: President, William D. McCrackan, of Boston; treasurer, Adam H. Dickey, of Brookline; clerk, John V. Dittemore, of Boston.

The report of the treasurer showed that the Mary Baker Eddy memorial fund had been closed on February 24, 1917, with a total amount contributed of $171,971.60. Of this sum $161,171.36 had been expended in the erection of the memorial. Any money remaining from the fund is to be devoted to the maintenance fund. The total receipts of the War Relief Fund up to May 31, 1917, amounted to $310,739.40. Of this amount $264,474.74 has been forwarded to the committees of Christian Scientists intrusted with the distribution. The relief work done in countries where the Mother Church has no committees of Christian Scientists, such as Armenia, Belgium, Lithuania, Poland, and Serbia, was carried on through responsible and accredited organizations, through the United States consulates, and through the States Department at Washington.

The net increase in Christian Science organization during the year 1916-17 was 109, as compared with 65 during the preceding year. Included in this number are new churches and societies in Great Britain, Canada, Porto Rico, and Argentina. During the 12 months preceding the annual meeting 2287 Christian Science lectures had been given, with a total attendance estimated at about 1,600,000 persons. This attendance represented an increase of about 40,000 over the estimated attendance of the previous year. Tours were made by members of the board of lectureship to South Africa, Australia, New Zealand, the Philippines, China, Japan, Hawaii, and Alaska. A substantial gain was made during the year in the circulation of all of the Christian Science publications. It is interesting to note that in 1903 the Christian Science Publishing Company and the publishers of Mrs. Eddy's works employed about 20 people, while in 1917, the publishing house employed more than 600 people.

According to the statement made by the trustees under the will of Mary Eddy Baker, the trustees paid out in 1916-17, $25,394.60 for lecture work. Thirteen thousand and four copies of the Christian Science textbook and other authorized books, and 2,574,175 Christian Science periodicals and other pieces of authorized literature were given to free lending libraries maintained by Christian Science churches, to public libraries, libraries of universities, colleges, normal schools, Federal and State prisons and reformatories, and to men in the armies and navies of the United States and foreign countries. During the period covered by the report the trustees had given aid to 88 churches and societies for erecting, purchasing, and remodelling church edifices, which represent a total cost of $1,328,610.86. Grants aggregating $315,513.07 were made to these organizations by the trustees. The treasurer reported that contributions to the Christian Science Benevolent Association and the Real Estate Fund showed a very favorable activity. Among the objects of the above mentioned association is that of caring for some of the early students of Mrs. Eddy and for others who helped lay the foundations of the Christian Science movement and who now need provision for their peace and comfort.

CHRISTMAS ISLAND. An island in the Indian Ocean, about 200 miles south of western Java. Its only importance is due to its enormous deposits of phosphate of lime. The island is nine miles long, has an area of forty-three square miles, and is politically attached to Singapore. Population in December, 1915, about 700, all employed in phosphate exploitation. Phosphate export in 1913, 150,003 tons; in 1914, 93,780 tons; in 1915, 25,738 tons. The decrease in exportation is due entirely to war conditions, as sufficient ship tonnage has not been available. The island has a railway.

CHURCH, John Adams. A prominent mining engineer died in New York City on February 12, 1917. He was born in Rochester and after graduating from the School of Mines in 1879, received the degree of Ph.D. from Columbia University. He was acting professor of mining and metallurgy at the school of mines in 1872-73, and for a time was editor of *The Engineering and Mining Journal.* Following this he joined the United States Geodetic Survey and made a survey of the famous Comstock lode. In 1886 Li Hung Chang, then viceroy of China, engaged Mr. Church to open the Mongolian silver mines and he spent four years in that country before returning to the United States to open offices as a consulting engineer.

CHURCH, William Conant. An American editor, died in New York City, May 23, 1917. He was born in 1836 in Rochester, N. Y., and came of old colonial stock. With his family he went in 1848 to Boston, where he studied at the Boston Latin School, and in 1854 to New York, where his father became publisher of the *Chronicle.* William C. Church succeeded to this responsibility when he was only twenty-four years old and the same year became publisher also of the New York *Sun.* Within the year, however, he went abroad, returning just in time to take part in the joint military-naval expedition under General Sherman and Admiral Dupont, and helped take Port Royal (1861). While volunteer aid on the staff of General Silas Casey, he participated in the battles of Williamsburg, where he was wounded, and at Fair Oaks. Later he was made captain and brevetted major and lieutenant colonel of volunteers. As the outgrowth of a project to establish a military paper, the *Army and Navy Journal* was founded by Col. Church and his brother, Francis P. Church, in 1863, and it continued under the former's editorship till his death. For ten years, before it was merged with the *Atlantic Monthly,* in 1879, the brothers published the *Galaxy,* a new magazine that numbered Henry James, Charles Reade, and Mark Twain among its contributors. Colonel Church was a founder and the first president of the National Rifle

Association. He wrote, besides many articles, lives of John Ericsson and Ulysses S. Grant.

CHURCHES. See Architecture.

CHURCHES OF CHRIST IN AMERICA, Federal Council of the. See Federal Council.

CHURCH OF ENGLAND. See England, Church of.

CHURCH OF GOD. See Adventists.

CHURCH OF GOD IN JESUS CHRIST. See Adventists.

CHURCH OF THE NEW JERUSALEM. This denomination in 1917 had about 10,200 communicants, 155 churches, and 150 ministers. It rejects the commonly received notion of the Trinity, and acknowledges the Lord Jesus Christ as the One God. Emmanuel Swedenborg is the true revealer of the meaning of the Scriptures, according to the teachings of this denomination. The General Convention exercises a supervision over the Church. The *New-Church Messenger* is the official journal. The publishing house is at 3 West 29th Street, New York City. It publishes Swedenborg's works.

CHURCH STATISTICS. See Religious Denominations.

CIGARS, CIGARETTES. See Tobacco.

CINCINNATI. See City Planning; Municipal Government.

CINCINNATI. University of. A co-educational institution of learning, one of the few municipal universities in the United States, located at Cincinnati, O. In the fall of 1917 there were 2922 students. Volumes in the library numbererd 88,100. The University was founded in 1871. President, Charles William Dabney, Ph.D., LL.D.

CITRESIA. This is a hydrated acid magnesium salt of citric acid, having the chemical formula $MgHC_6H_5O_7 5H_2O$. It has the same laxative and purgative action as magnesium citrate and occurs as a white or faintly yellowish-white, crystalline, odorless powder having an acid taste. It is soluble in water, but insoluble in alcohol, ether or chloroform.

CITRUS CANKER. See Botany, *Plant Diseases.*

CITRUS FRUITS. See Horticulture.

CITY GOVERNMENT. See Municipal Government.

CITY MANAGER. See Municipal Government.

CITY PLANNING. Recognition of the fact that city planning should find a place in the legalized framework of city government is increasing. When attention was first given to city planning in the United States it was extra official. Studies and reports were made by or for civic organizations. As a rule, there the matter stopped. A later step was the employment by the city of a specialist in city planning to make a local survey and draw up a general scheme of action. This was good as far as it went but responsibility for carrying out the plan was placed on no one and seldom was it assumed by the governing body. Parallel with this was the creation of city planning commissions. Rarely were these a component part of the city government. They could advise but could not enforce city planning activities. Such were and still are the city planning commissions required by statute in every city, and also in every town of 10,000 population, in Massachusetts, and made permissible in some other parts of the country. In a few instances, city planning duties have been vested in a commission composed jointly of city officials and of citizen members. The question arises, should officials or citizen members be in the majority on such a commission? Also, should the official members be selected from the executive or the legislative branch of the government? The answer to both questions depends largely upon the powers of the commission. If the commission has power to adopt a plan then there is strong argument for a majority membership of city officials, and that, too, from the legislative arm of the government. The more purely advisory the commission may be the less does it matter if the membership be mostly unofficial. But if it is to do much real planning, for actual execution, the executive branch of the government should have effective representation, through the responsible head of municipal engineering work.

Cincinnati City Planning Commission. The new mayor-and-council city charter for Cincinnati, Ohio, adopted November 6, 1917, to go into effect January 1, 1918 (see Municipal Government) provided for a city planning commission of seven members, five of whom shall be the mayor, director of public service and the three park commissioners and two shall be citizens. The commission is given broad powers. Its duty is to make plans of the whole or any part of the city and of any land outside the city which it thinks bears a relation to the planning of the city. These plans are to include the commission's recommendations for new streets, bridges, subways, parks, and playgrounds. They may also include recommendations for zoning and for limiting the height, bulk and use of buildings in the various zones. Whenever the commission shall have made a plan for any part of the city no public improvement or public utility shall be built or authorized to be built within the area covered by the plan without the approval of the commission, nor shall any street be opened in any part of the city without such approval, provided that the city council, by a vote of not less than two-thirds of its members, may overrule any such failure to approve. The commission may make recommendations to the proper city authority or to any corporation or individual concerning the location of streets, public buildings or works, public transportation or other utilities to be erected in the city or contiguous territory. All plots for laying out land in the city or within three miles of it must be submitted to and approved by the commission as a condition precedent to the dedication of streets or commons.

Rochester, N. Y., Superintendent and Advisory Board. A quite different method of handling city planning was authorized by statute for Rochester, N. Y., during the year. Provision is made for a bureau of city planning in the engineering department of the city, headed by a superintendent appointed by the city engineer and holding office during his pleasure. There is also an advisory board, consisting of the corporation council, ex-officio, and four members appointed by the mayor. The city planning superintendent has power to make a city plan; to pass on all plotting for the opening, widening or extension of streets; and to establish building zones and restrict buildings to conform thereto. In the preparation of a city plan the superintendent must obtain the services of competent consultants. All actions of the superintendent are subject to approval by the advisory board and such joint action is subject to review by the mayor. The mayor may hold public hearings on the advice of the superintendent or of the advisory board or on his own initiative, and has power of absolute veto after such hearings have been held. It may be added that under the city charter of Rochester the mayor appoints the city engineer and in general is the chief executive officer. The city engineer is a member of the boards of estimate and of contract awards, as is also the mayor. It would therefore appear that the city council of Rochester has little control of city planning.

St. Louis. As an illustration of what needed to be done in many cities and might be done by a city planning commission, the improved major-street plan proposed in 1917 by the City Plan Commission of St. Louis, Mo., may be considered. The commission found that about 75 per cent of the streets of the city were sixty feet wide, which was insufficient for heavy through traffic and unnecessarily wide for minor residence streets. Less than 15 per cent of the total street mileage was over sixty feet wide. Moreover, the streets were laid out haphazard—which unfortunately is not peculiar to St. Louis—so as to afford but few continuous thoroughfares and hardly a radial street. It was found that most of the widenings and extensions needed to provide an adequate major-street plan would fall in outlying districts, where the changes could be effected without great physical difficulty or expense. As an aid to deciding what widenings and extensions were needed a traffic census was made. Maps were then drawn which showed by the relative widths of the street lines the comparative numbers of horse-drawn vehicles, passenger automobiles, and motor trucks passing over the principal streets of the city. There was a separate map for each class of traffic and a fourth map showing the combined traffic. These maps made evident, both by the width of the lines and the gaps where no streets existed and by the rectangular network of streets, just where the street system needed reënforcement to accommodate the traffic in both weight and direction. A fifth map was then readily drawn to indicate needed street widenings, extensions, and cutoffs. A report detailing the whole study by means of text, maps, and tables was published in 1917 by the City Plan Commission of St. Louis. An article based on the report, prepared by Harold Bartholomew, engineer of the commission, appeared in *Engineering News-Record*, July 19, 1917. Mr. Bartholomew thus summarizes the advantages of a major street plan:

> "1. It simplifies future work. Whenever an extensive street extension or widening becomes necessary, it can be made in accordance with a well-defined generally accepted plan.
>
> "2. It will be a means of great economy in the transit and transportation problems. As improvements in the major-street plan are made, certain rerouting of the transit lines can be made, which will reduce the time and the cost of operation. St. Louis is the largest city in the country having surface transit only. It is not yet in a position to construct rapid-transit lines. By carefully executing the major-street plan, good service can be provided without the necessity of heavy expenditures for rapid-transit lines within the next few years. When rapid-transit lines are needed, it will be possible to construct them to better advantage and greatly reduce the cost.
>
> "3. It encourages much more economic city maintenance. The major streets will gradually develop as the principal channels of travel. They will consequently reduce the miscellaneous movement of traffic on minor streets. On these minor streets, then, considerable expense can be avoided by reducing the width of the roadway and by laying, in many instances, pavements of considerably less cost. On 17.4 miles of streets to be improved in 1917, the standards for major-traffic streets will be adopted, while the roadways of minor streets, where possible, are being reduced from 36 to 26 ft. in width and less expensive paving laid. The remaining width of 10 ft. is being devoted to grass or shrubs. To discourage traffic on minor streets means greater privacy and hence greater stability of values and development."

Planning Conferences. Early in the year a metropolitan district conference on city and town planning was held in New York City. The importance of coördinating the planning efforts of Long Island and of Westchester County on the east and north and of five counties of northeastern New Jersey on the west and south was urged. Stress was laid upon the need for better transportation service between districts lying on opposite sides of New York City. Later in the year the City Planning Conference was held at Kansas City, Mo., where it was decided to change the temporary form of organization which has provided for a half dozen years. Accordingly, the City Planning Institute was formed, with provision for several grades of membership (Flavell Shurtleff, secretary, 19 Congress St., Boston, Mass.).

War-Time City Planning. Rarely have opportunities for comprehensive town planning been presented and never have they been more fully utilized than in connection with the national army cantonments of the United States. Sixteen cities of 30,000 inhabitants were planned, built, and occupied within a period of a few months on sites which at the outset were cornfields, forests, or open country. The fact that the buildings were of wood and only one or two stories in height was more than offset by the speed with which they were provided, the enormous volumes of building material required, and the completeness of the utility services. In the planning of these cantonments the landscape architect and the engineer worked hand in hand and the entire camps and all their utilities were laid out and built as one comprehensive whole—two conditions which rarely prevail. In similar but not always so efficient manner many other military camps were provided during the year. Much attention was also given to urban areas for housing the suddenly massed industrial population at munition and shipbuilding plants. Industrial housing generally has been given marked attention of late and with it has gone considerable town and city planning. Rural planning was also coming to the front both in the United States and Canada. In the latter country the Conservation Commission had for several years had an expert British town planner on its staff, who recently brought out a large volume on rural planning. The replanning of the devastated cities of Europe was under consideration for the past two or three years and would demand increasing attention in the early future. The slowing down of municipal construction in 1917 will afford engineers and others an opportunity to plan for future city needs which should not be neglected. Such planning required no capital outlay, no materials or labor, and might be made to contribute to the comfort, happiness, and health of city dwellers, besides saving immense sums which, without wise planning, would be misspent.

Bibliography: Post (editor), *City Planning Progress in the United States* (Washington, D. C.), reviews city planning efforts up to 1917 in 233 municipalities; Yeoman, *City Residential Land Development* (Chicago); Burnap, *Parks, Their Design, Equipment, and Use* (Philadelphia); Adams, *Rural Planning and Development* (Ottawa, Canada). See Architecture.

CIVIC FEDERATION, National. See National Federation.

CIVIL SERVICE REFORM LEAGUE, National. The war brought problems of civil personnel to the Federal Government which drew the early attention of the league. A few months before the United States entered the war the league had greatly increased its annual budget and was accordingly able to employ experts to study these problems and make recommendations for their solution, some of the recommendations being later adopted by the Federal government.

During the year the league heartily approved of the executive order of the president that further vacancies in the office of first, second, and third class postmasters be filled henceforth by examination instead of by political selection. For the purpose of conducting its propaganda to extend the scope of the civil service law, and also to draw a clear line of distinction between administrative and policy determining functions, a Washington office was opened in addition to the central office of the league in New York. Other practical services to the government included direct aid in the recruiting of applicants for civil service and the simplification of the examination methods. The officers of the league in 1917 were: President, Richard Henry Dana; secretary, George T. Keyes; treasurer, A. S. Frissell.

CLARK, William Bullock. An American geologist, died July 27, 1917, at North Haven, Me. He was born at Brattleboro, Vt., December 15, 1860, was educated at Amherst College, and studied geology at Munich. He was appointed instructor in geology at Johns Hopkins University in 1887, and in 1888 joined the United States Geological Survey. He was associate professor of geology at Johns Hopkins, 1892-94; professor and director of the Geological Laboratory from 1894 until his death. In 1891 he was appointed director of the Maryland Weather Service, in 1896 State geologist of Maryland, in 1900 Commissioner for the State of Maryland on the resurvey of Mason and Dixon's line, and in 1908 a member of the Maryland State Conservation Commission. His publications include interesting papers and reports dealing with American geological topics. They were written chiefly for the volumes of the *Maryland Geological Survey*.

CLARK UNIVERSITY. A non-sectarian institution for graduate study only at Worcester, Mass. In the fall of 1917 there were 69 students and 27 members of the faculty. Volumes in the library numbered 83,000. Productive funds in 1917 amounted to $2,400,000 and the income was $103,875. Clark University was founded in 1889. President, G. Stanley Hall, Ph.D., LL.D.

CLASSICAL LITERATURE AND SCHOLARSHIP. See Philology, Classical.

CLEARINGS, Bank. See Financial Review.

CLEARING SYSTEM. See Banks and Banking.

CLEMENCEAU, Georges. See France, *History;* and War of the Nations.

CLEMENTS, Judson Claudius. An American politician and commerce expert, died June 18, 1917, at Washington, D. C. He was born in Walker Co., Ga., February 12, 1846, studied law, was admitted to the bar in 1869, and practiced at LaFayette, Ga., in 1869-92. He was county school commissioner in 1871, a member of the Georgia House of Representatives in 1872-76, and a member of the State Senate in 1877. From 1881 to 1891 he was a member of Congress, was a member of the Interstate Commerce Commission in 1892-1912, and was reappointed to the Commission in 1913. In 1911 he published *Moral Results of Modern Transportation and Transmission Facilities.*

CLIMATE. See Meteorology.

CLOSSON, Henry Whitney. A veteran of the old frontier battles and the Civil War, died July 16, 1917, at the age of eighty-five. He was graduated from the United States Military Academy in 1850. He participated in many explorations and Indian campaigns, including the expeditions against the Seminoles in 1857. At the outbreak of the Civil War he was a captain of artillery. He was brevetted lieutenant colonel for his services at the siege of Fort Morgan, and advanced to rank of brigadier general, retired, in 1904. He served on the Board of Ordnance and Fortifications for several years before his retirement in 1896.

CLOTHES MOTH. See Entomology.

CLOTHING INDUSTRY. See Strikes; Textile Manufacturing.

CLUBS. See Architecture.

COAL. The production of coal in the United States in 1916 was 590,098,175 net tons, valued at $867,125,638, an increase compared with 1915 of 58,478,688 tons, or 11 per cent, in quantity, and $180,434,452, or 26 per cent, in value. The production of bituminous coal was 502,519,682 tons, valued at $665,116,077, an increase of 13.5 per cent in quantity, and 32.5 per cent in value. The production of Pennsylvania anthracite was 87,578,493 net tons, valued at $202,069,561, a decrease of nearly 2 per cent in quantity, but an increase of more than 9 per cent in value.

All the principal coal-producing States showed increases in output. The most notable increase was in Ohio, whose production of coal in 1916 was 12,293,528 tons, or nearly 55 per cent greater than in 1915. The increase in the value of the Ohio product was nearly $22,000,000, or about 91 per cent. The largest increase in quantity was in Pennsylvania—12,340,287 tons, or 7.8 per cent compared with 1915. The increase in West Virginia was 9,276,058 tons, or 12 per cent; in Illinois, 7,365,760 tons, or 12.5 per cent; and in Indiana, 3,087,376 tons, or 18 per cent. Iowa, New Mexico, Oklahoma, South Dakota, and Texas recorded slight decreases in 1916 compared with 1915. The output of bituminous coal in 1916 established a new record in the United States as a whole and also in most of the individual States.

The average value of anthracite was $2.30 a net ton, compared with $2.07 in 1914 and 1915. The average value at the mines, of the bituminous coal produced in 1916, was $1.32 a ton, compared with $1.13 in 1915 and $1.17 in 1914. Both of these figures are higher than those recorded in any other year from 1880 to 1916, a period for which comparable figures are available.

The number of men employed in the production of bituminous coal in 1916 was 561,102, an increase of 3646 compared with 1915. The number of men employed in the production of anthracite coal decreased from 176,552 in 1915 to 159,869 in 1916.

The anthracite mined in 1916 amounted to 78,195,083 gross tons, valued at $202,009,561, a decrease in quantity of 1.6 per cent, and an increase in value of 9.4 per cent compared with 1915. The shipments decreased 1.7 per cent—from 68,666,456 gross tons in 1915 to 67,501,363 tons in 1916. The shipments of prepared coal of the sizes above pea in 1916 were 40,747,215 tons, a decrease of 1.1 per cent; the shipments of pea size were 7,520,804 tons, a decrease of 8.4 per cent; and the shipments of steam sizes smaller than pea were 19,233,344 tons, a decrease of but .05 per cent compared with 1915.

The production in the Lehigh region was 10,929,055 gross tons; in the Schuylkill region, 23,659,448 tons; in the Wyoming region, 43,111,732 tons; and in the Sullivan County (Bernice Basin), 494,848 tons.

There was a large decrease in the number of men employed in the production of anthracite in 1916, and the output was maintained only through an increase in the number of working days. The number of men employed in 1915 was 176,552, and in 1916, 159,869.

At the end of 1917, the United States Geological Survey estimated the output of bituminous coal for the year as 544,142,000 short tons, or 8.3 per cent more than the 1916 output. The preliminary estimate for anthracite was between 90,000,000 and 100,000,000 short tons. The coal situation in the United States was serious during the year. Constantly there were coal shortages and, at various times, shortages when not actually occurring were threatened. Transportation facilities were bad throughout the entire year, and in the opening months, the stocks of anthracite were at the lowest point since 1902. With a coal shortage in the northwest, traffic was opened on April 16 on the Great Lakes, earlier than usual. There was a steady demand in the spring to buy coal for winter use, but the Federal Trade Commission ordered that the usual reduction in price for April should be maintained.

Production of coal in the United States in 1915 and 1916, United States Geological Survey

State	*1915* *Total quantity (Net tons)*	*1915* *Number of employees*	*1916* *Total quantity (Net tons)*	*1916* *Number of employees*
Alabama	14,927,937	22,591	18,086,197	25,308
Alaska	1,400	....	13,073	83
Arkansas	1,652,106	3,751	1,994,915	3,772
California, Idaho, and Nevada	12,503	36	*a* 7,240	18
Colorado	8,624,980	12,372	10,484,237	13,104
Georgia	134,496	368	178,554	411
Illinois	58,829,576	75,610	66,195,336	75.538
Indiana	17,006,152	22,777	20,093,528	23,965
Iowa	7,614,143	15,549	7,260,800	14,443
Kansas	6,824,474	13,260	6,881,455	12,132
Kentucky	21,361,674	27,960	25,393,997	31.222
Maryland	4,180,477	5,664	4,460,046	5,633
Michigan	1,156,138	2,569	1,180,360	2,535
Missouri	3,811,593	9,173	4,742,146	9,654
Montana	2,789,755	3,158	3,632,527	3.781
New Mexico	3,817,940	4,205	3,793,011	4,522
North Dakota	528,078	590	634,912	714
Ohio	22,434,691	40,053	34,728,219	41,394
Oklahoma	3,693,580	8,457	3,608,011	7,800
Oregon	39,231	151	42,592	106
Pennsylvania, bituminous	157,955,137	174,593	170,295,424	168,212
South Dakota	10,593	35	8,886	38
Tennessee	5,730,361	8,948	6,137,449	9,211
Texas	2,088,908	5,087	1,987,503	4,481
Utah	3,108,715	3,564	3,567,428	3,129
Virginia	8,122,596	8,959	9,707,474	9,777
Washington	2,429,095	4,850	3,038,588	4,797
West Virginia	77,184,069	75,882	86,460,127	78,067
Wyoming	6,554,028	7,244	7,910,647	7,255
Total bituminous	442,624,426	557,456	502,519,682	561,102
Pennsylvania anthracite	88,995,061	176,552	87,578,493	159,869
Grand total	531,619,487	734,008	590,098,175	720,971

a No coal was produced in Nevada in 1916.

With the entrance of the United States into the war, the question of fuel supply for the various industrial plants, as well as for export and domestic consumption, became a vital one. A coal committee of the National Defense Council consisting of Secretary Lane of the Department of the Interior, Chairman Peabody of the Coal Production Committee of the Council, and ex-Governor Fort of the Federal Trade Commission was in conference with a number of coal producers and on June 28 fixed a coal price which was a reduction of about one-third from the price then prevailing. The prices figuring in this agreement were substantially $3.00 a ton with a 50-cent reduction for all coal sold to the government. This agreement was repudiated by Secretary of War Baker as chairman of the National Council of Defense on June 28, Secretary Baker accusing the coal men of setting an exorbitant and excessive price. On the other hand, it was argued that Secretary Lane, who represented the government on the Conference Committee, was advised by experts of the Geological Survey familiar with the production and marketing of coal, and in behalf of the industry it was stated that the price settled on was a fair one. It was suggested, however, that inasmuch as a prosecution of coal men on a charge of price fixing was then taking place in New York that the Attorney-General dreaded the effect that such an agreement would have upon the trial. The repudiation of the agreed price added further uncertainties to the situation, though during mid-July all records were broken for shipment of anthracite.

On August 21, President Wilson, after an investigation by W. B. Colver, Federal Trade Commissioner, fixed the base price for bituminous coal at approximately $2.00 per short ton at the mines instead of the $3.00 base price as asked for by the government. The price of anthracite was also fixed at $4.00 to $5.36 per short ton according to locality and size. It was urged that this price fixing was forced upon the president because of the threats of various governors in the Middle West to fix such prices if the Federal Government did not act, but these prices were found inadequate, and on October 29, the president permitted an increase of 45 cents per ton in the price of bituminous coal in practically all mines in the country, and on December 1, there was an increase in the price of anthracite of 35 cents per ton to meet the proposed wage increase for anthracite miners.

On August 24, Dr. Harry A. Garfield (q.v.) was appointed Fuel Administrator, and the government attempted to cope with the situation with rather a lack of success in view of the extraordinary conditions that developed later in the year. (See FOOD CONTROL.) A number of small mines were closed because they could not work at the price allowed during the period of uncertainty, and the Fuel Administrator refused to sanction the opening of new mines on the ground that such undertakings might not be productive and might be a waste of effort. Furthermore, the Fuel Administrator did not adopt a plan for a zoning system when first it was proposed by producers and railways. Various other suggestions were made to the Fuel Administrator by different persons in the industry, but few of these had been worked out satisfactorily by the end of the year.

The fuel administration and many of the miners blamed the railways for lack of transportation, and this indeed was a serious difficulty. From the latter part of July, transportation facilities were overtaxed and by December, when heavy snow and intense cold prevailed, a demoralization took place resulting in practically a coal famine in various sections of the country, particularly in the Middle West and East.

Wages were raised during the year both in bituminous and anthracite fields, and every effort was made to increase the production. Thus, at the end of December after the slump in the middle of the month, bituminous coal averaging 1.793,000,000 short tons per working day was being mined during Christmas week.

At the end of the year, there was a shortage of practically 1,000,000 carloads, though the average daily production of coal was estimated at 1.402.594 tons, which was the lowest mark reached since the week of August 18 at the time of the coal strike in Illinois and the South Appalachians, when but 1,638,513 tons were produced.

COAL SITUATION IN EUROPE. However serious the coal situation was in the United States, even worse conditions prevailed throughout the world, particularly among the belligerent nations. In 1913, the lowest normal year for war production, the coal output of the world was 1,478,000,000 tons, distributed somewhat as follows: United States, 570,000,000 short tons; Great Britain, 322,000,000 short tons; Germany, 306,000,000 short tons; Austria-Hungary, 60,000,000 short tons; France, 45,000,000 short tons; Russia, 36,000,000 short tons; Belgium, 25,000,000 short tons; and Japan, 24,000,000 short tons.

In this year the production of the United States was approximately 38 per cent and by 1916 it had risen to 44 per cent and in 1917 it was estimated at 45 per cent or over. Fuel production had grown from 270,000,000 short tons in 1900 to almost 650,000,000 short tons in 1917. Since the beginning of the war, the coal exports of the United States had exhibited a slight increase, amounting to about 20 per cent more in 1917 than in 1913, while those of Great Britain had declined and those of Germany were confined to the adjacent neutral countries figuring in exchange for various needed commodities. In the fiscal year, 1917, of the coal exported from the United States, about 68 per cent went to Canada, 6 per cent to Cuba, 8 per cent to South America, and less than half of one per cent went to Italy.

In Great Britain, on November 14, the Board of Trade announced that it would take over the coal mines for the period of the war, establishing a new department of control under the direction of Guy Calthrop, general manager of the Northwestern Railway, as Coal Controller, with Sir Richard Redmayne, Chief Inspector of Mines, and an advisory committee of owners and miners to assist him. Matters connected with the distribution, wages, production, and the price of coal later were concentrated in the new Mines Central Department and the Government Committee for the State Control of the Welsh field was dissolved. An early step of the Controller was to relieve the pressure on the British railways by providing for increased transport of coal by canal, and in July, he announced that he expected to save no less than 700,000,000 tons-miles annually in the transport of coal by railway by dividing Great Britain into twenty areas so as to economize and facilitate distribution. This plan came into effect in September and dealt with the coal for inland consumption.

It provided that first, consumption of coal should take place as near the producing place as possible; second, that the movement of traffic should follow the main traffic lines as much as possible; third, that such movement should be as far as possible in well-defined directions; fourth, that an area producing less coal than that required for its own needs should not ship out of such a district, while an area providing more coal than it consumes should receive no supply from other areas. While some dislocation of business prevailed for a time, yet matters were soon settled though the actual net results obtained were not deemed by all to be as great as anticipated by the Controller. Another plan developed was to secure increased mobility of mining labor so as to utilize the surplus of labor of some districts in others where there was a deficiency. A demand for increase of wages for the miners led to an increase of 2*s.* 6*d.* per ton being added to the price of coal, and a Coal Mines Control Agreement (Confirmative) Bill was passed with various objections on the part of the operatives.

At the end of September at the new colliery at Keresley, Northeast Warwickshire, four valuable coal seams were laid bare, having an aggregate thickness of just over 23 ft. at a depth of 711 yards. This colliery was to be the largest in the country, giving employment ultimately to 4000 men. In the first nine months of 1917, the coal output was 187,750,000 tons, or 5,000,000 less than in the corresponding period of 1916, due to the demands that had been made by the military on the colliery districts for recruits.

COAST AND GEODETIC SURVEY, United States. In an executive order dated September 24, 1917, President Wilson directed that in view of a national emergency existing certain vessels, including their equipment and personnel, and also many engineers in the commissioned personnel of the Coast and Geodetic Survey, should be transferred to the Navy Department. In addition, many men who at the time were part of the commission personnel of the survey were transferred and commissioned in the Officers' Reserve Corps. See Terrestrial Magnetism.

COAST DEFENSES. See Military Progress.

COASTLAND, or in German, Küstenland. An administrative district of Austria at the head of the Adriatic Sea, consisting of the crownlands of Istria, Görz and Gradisca, and Trieste (qq.v.). Area, 3077 square miles. Population December 31, 1910, 893,797; as estimated in 1913, 938,008. The principal cities are the great Austrian seaport Trieste, which with its territory had an estimated population of 246,500 in 1914; Pola, the important Austrian naval base, 59,300; Görz (Goritz, Gorizia), 32,600.

COCHIN-CHINA. A French colony, the southernmost division of French Indo-China (q.v.). Saïgon is the capital, with about 68,000 inhabitants; Cholon has about 182,000. River and coast fishing, stock raising, and agriculture are carried on.

CODY, William F. ("Buffalo Bill"). An American scout and showman, died in Denver, Colo., January 10, 1917. Born in Scott County, Iowa, February 26, 1846, he went with his family to Missouri and later to Kansas, where they were among the first settlers. His father, who was elected to the Territorial Legislature, was killed in the Kansas Border War when the son was only 14, and young Cody was left with his mother and two sisters to support. First he became a government freighter between Salt Lake City and the Missouri River. Later, when the "pony express" from St. Joseph, Mo., to San Francisco was established, he entered the service as a rider. During the Civil War, from 1861 to 1865, he was a government scout and guide with the 7th Kansas Cavalry, serving under Gens. Blunt, McNeil, and A. J. Smith. After the war he opened the Golden Rule Hotel at Leavenworth, Kans., but he could not long tolerate anything as quiet as hotelkeeping. By 1867 Cody, who had already made a name as a hunter, contracted to furnish the Kansas Pacific Railway with all the buffalo meat required to feed its army of construction laborers. Within eighteen months he killed 4280 buffaloes, thereby earning the name by which he was afterward best known, "Buffalo Bill." From 1868 to 1872 he was again a government scout and guide in the expeditions against the Sioux and Cheyennes. Gen. Phil Sheridan and other noted soldiers of the time found his services invaluable. For a year (1872) he was a member of the Nebraska Legislature, but he also found time to take the Grand Duke Alexis of Russia on a buffalo hunt, besides a party of well-known New Yorkers. These men, among whom was James Gordon Bennett, shortly afterward entertained Cody in New York. There he was said to have seen a play called ***Buffalo Bill, King of Bordermen***, the success of which induced him to go on the stage himself. For some time he appeared in plays depicting life on the frontier. In 1874, however, he was again a scout, as guide of the Big Horn expedition. While he was chief of scouts under Gen. Crook, in 1876, Yellow Hand, the Sioux chieftain, challenged him, "Long Hair," to single combat. Cody lived to be famous for the exploit, and the Indian did not. During another Sioux outbreak, in 1890-91, he headed the Nebraska National Guard and fought the battle of Wounded Knee.

In 1883, Cody organized the "Wild West" show and from that time devoted most of his attention to an enterprise that made him known on two continents, and which continued to be successful till a few years before his death. Latterly the show had become known as "A Congress of the Rough Riders of the World." It appeared yearly in most of the cities of the United States, and made a sensation abroad. At the first performance in England 40,000 persons were present. Among his patrons Cody counted many of the crowned heads of Europe and other distinguished persons. Later the show got into financial difficulties and at last went into the hands of a receiver, "Buffalo Bill" saving just enough out of the collapse to keep his Wyoming ranch in Big Horn County. After his death Cody's body lay in state in the capitol at Denver, and is eventually to be placed in a tomb hewn from the rock at the top of Lookout Mountain, near Denver, with a monumental figure to mark the spot.

COHAN, Jere John. One of the originators of vaudeville in America and one of the most popular of American comedians of all time. He was sixty-nine years old when he died on August 1, 1917. He served as a drummer boy during the Civil War, and shortly after its close entered upon his career on the stage. He made his last appearance on the stage about nine years ago when he toured the country with *The Yankee Prince*, a production of his son's, George M. Cohan. In 1915 he played for a week in the *Friars' Frolic*. Most of the sketches and the plays which he appeared in were written by his son.

COINS, Value of Foreign. The table of coins, on the following page, gives the value of foreign coinage in the currency of the United States.

COIT, Henry Leber. A specialist in children's diseases, died in Newark, N. J., on March 13, 1917. He was sixty-two years old and was the founder of the Newark Babies' Hospital,

(Proclaimed by the Secretary of the Treasury October 1, 1917)

Country	*Legal Standard*	*Monetary Unit*	*Value in Terms of U. S. Money*	*Remarks*
Argentine Rep.	Gold	Peso	$0.9648	Currency: Depreciated paper, convertible at 44 per cent of face value; exchange rate about $0.429.
Austria-Hungary	Gold	Crown	.2026	Greatly depreciated; no quotations.
Belgium	Gold (*a*)	Franc	.1930	Member of Latin Union; gold is the actual standard.
Bolivia	Gold	Boliviano	.3893	12½ bolivianos equal 1 pound sterling.
Brazil	Gold	Milreis	.5462	Currency: Government paper; exchange rate about 25 cents to the milreis.
British Colonies in Australasia and Africa	Gold	Pound sterling	4.8665	
Canada	Gold	Dollar	1.0000	
Cent. American States:				
Costa Rica	Gold	Colon	.4653	Exchange rate $0.263 = 1 colon.
B. Honduras	Gold	Dollar	1.0000	
Nicaragua	Gold	Cordoba	1.0000	Exchange rate $1.00 = 1.01 cordobas.
Guatemala	Silver	Peso	.7105	Currency: Inconvertible paper; exchange rate about 38 pesos = $1.00.
Honduras	Silver	Peso	.7105	Currency: Bank notes; exchange rate about $0.40.
Salvador	Silver	Peso	.7105	Currency: Convertible into silver on demand; exchange rate about $0.365.
Chile	Gold	Peso	.3650	Currency: Inconvertible paper; exchange rate approximately $0.296.
China	Silver	Tael Canton	1.1612	The tael is a unit of weight not a coin. The customs unit is the Haikwan tael. The values of other taels are based on their relation to the value of the Haikwan tael.
		Tael Haikwan (customs)	1.1851	
		Tael Shanghai	1.0639	
		Dollar Yuan	.7632	The Yuan silver dollar of 100 cents is the monetary unit of the Chinese Republic; it is equivalent to .644 + of the Haikwan tael.
		Dollar Hongkong	.7660	
		Dollar British	.7660	
		Dollar Mexican	.7717	
Colombia	Gold	Dollar	.9733	Currency: Government paper and gold: exchange rate approximately 1.03 pesos to $1 gold.
Cuba	Gold	Peso	1.0000	
Denmark	Gold	Crown	.2680	Exchange rate $0.307 = 1 crown.
Ecuador	Gold	Sucre	.4867	Exchange rate $0.37 = 1 sucre.
Egypt	Gold	Pound (100 piasters)	4.9431	The actual standard is the British pound sterling, which is legal tender for 97½ piasters.
Finland	Gold	Mark	.1930	Exchange rate $0.165 = 1 mark.
France	Gold (*a*)	Franc	.1930	Member Latin Union; gold is actual standard. Exchange value $0.173.
German Empire	Gold	Mark	.2382	Greatly depreciated; no quotation.
Great Britain	Gold	Pound sterling	4.8665	Exchange value $4.755.
Greece	Gold (*a*)	Drachma	.1930	Member of Latin Union; gold is the actual standard.
Haiti	Gold	Gourde	.2500	Currency: Inconvertible paper; exchange rate approximately $0.183.
India (British)	Gold	Rupee	.3244	(15 rupees equal 1 pound sterling.)
Italy	Gold (*a*)	Lira	.1930	Member Latin Union; gold is actual standard; exchange value, $0.13.
Japan	Gold	Yen	.4985	Exchange value $0.51.
Liberia	Gold	Dollar	1.0000	Currency: Depreciated silver token coins. Customs duties are collected in gold.
Mexico	Gold	Peso	.4985	Exchange value $0.525.
Netherlands	Gold	Florin	.4020	Exchange value $0.42.
Newfoundland	Gold	Dollar	1.0000	
Norway	Gold	Crown	.2680	Exchange rate $0.31 = 1 crown.
Panama	Gold	Balboa	1.0000	
Paraguay	Silver	Peso	.7105	Currency: Depreciated paper; exchange rate 2,700 per cent.
Persia	Gold	Achrefi	.0959	Silver circulating above its metallic value; exchange value of silver kran approximately $0.179.
	Silver	Kran	.1308	
Peru	Gold	Libra	4.8665	
Philippine Islds.	Gold	Peso	.5000	
Portugal	Gold	Escudo	1.0805	Currency: Inconvertible paper; exchange rate approximately $0.70½.
Rumania	Gold	Leu	.1930	
Russia	Gold	Ruble	.5146	Exchange rate $0.175 = 1 ruble.
Santo Domingo	Gold	Dollar	1.0000	
Serbia	Gold	Dinar	.1930	
Siam	Gold	Tical	.3709	
Spain	Gold (*a*)	Peseta	.1930	Valuation is for gold peseta; currency is notes of the bank of Spain; exchange value approximately $0.235.
Straits Setlmts.	Gold	Dollar	.5678	
Sweden	Gold	Crown	.2680	Exchange rate $0.337 = 1 crown.
Switzerland	Gold	Franc	.1980	Member Latin Union; gold is actual standard; exchange value $0.213.
Turkey	Gold	Piaster	.0440	100 piasters equal to the Turkish £.
Uruguay	Gold	Peso	1.0342	Exchange rate $1.00 = 0.914 peso.
Venezuela	Gold	Bolivar	.1930	

(*a*) And silver.

the first institution of its kind in the United States. He was also a promoter of the movement for certified milk. He was graduated from the College of Pharmacy in New York City in 1876 and from the College of Physicians and Surgeons in 1883. He was a member of the International Society Goutte de Lait, with headquarters in Budapest. He was also a member and the first president of the American Association of Medical Milk Commissions. In 1911 he represented the New Jersey medical societies at the International Congress for the Protection of Infants, held in Berlin.

COKE. The production of coke in 1916 was 54,533,585 net tons, valued at $170,841,197, an increase compared with 1915 of 12,952,435 tons, or 31 per cent, in quantity, and $65,337,329, or 62 per cent in value. The output of beehive coke was 35,464,244 tons, having a reported value of $95,468,127, an increase of nearly 29 per cent in quantity and 67 per cent in value, compared with 1915. The production of by-product coke was 19,069,361 tons, valued at $75,373,070, an increase of 35.5 per cent in quantity and 55.2 per cent in value, compared with the previous year. By-product coke represented nearly 35 per cent of the total in 1916, compared with 34 per cent in 1915. The average number of beehive ovens in operation in 1916 was 65,605, compared with 48,985 in 1915, an increase of 16,620 ovens. The number of active by-product ovens increased from 6036 in 1915 to 6607 in 1916. Six new by-product coke plants with an aggregate of 60 ovens, began operations in 1916, and had an aggregate output of 708,485 tons of coke. Every important producing State shared in the increase.

During 1917 the by-product coke industry in the United States made remarkable progress. On December 31, 1917, there were 54 by-product coke plants containing 7495 ovens with an annual capacity for handling 35,625,000 tons of coal and producing 26,005,400 tons of coke, 89,658 tons of ammonia, and 11,464,000 gallons of toluol. There were under contract for operation in 1918, 1844 ovens having a carbonizing capacity of approximately 10,000,000 tons of coal per annum and a coke-making capacity of approximately 7,000,000 tons per annum. If operated at capacity these additional plants would afford approximately 3,500,000 gal. of toluol and 25,000 tons of ammonia (100 per cent NH_3). This industry supplied coke for the blast furnace, gas for the open hearth and heating furnace, benzol and toluol for high explosives, creosote for timber, ammonia for fertilizer and as a refrigerant for food, dyes for fabrics, cyanide for mines, and drugs for physicians. During the year the Carnegie Steel Company constructed 640 Koppers by-product ovens which were to be put into operation early in 1918, and would have a capacity of 4,100,000 net tons of coal. The coke and by-products would be for use at the company's plants at Clairton, Duquesne, Edgar Thomson, and Homestead.

COLBY, Gardner. An American civil service officer, died November 4, 1917, at East Orange, N. J. He was born at East Orange, N. J., September 12, 1864, graduated at Brown University in 1887, entered business life and in 1893-1901 was president and treasurer of the Everett Pulp and Paper Company and treasurer of the Everett Land Company. He was treasurer of the Kinsman Block Signal Company in 1906-08. In May of the latter year he was appointed secretary and chief examiner of the New Jersey Civil Service Commission. Colby managed the first independent campaign of the original Progressive party.

COLGATE UNIVERSITY. A non-sectarian institution of learning including two departments—college and theological seminary—at Hamilton, N. Y. There were in the fall of 1917 in both departments 464 students and 50 members of the faculty. Volumes in the library numbered 80,000. Productive funds in 1917 amounted to $2,125,000 and income to $93,629. Colgate was founded in 1819. President, Elmer Burritt Bryan, LL.D., L.H.D.

COLLEGES. See Universities and Colleges.

COLLEGES, Agricultural. See Agricultural Education.

COLLISIONS. See Railway Accidents.

COLOMBIA. A northwestern republic of South America. Capital, Bogotá.

Area and Population. On account of unsettled boundaries, estimates of area differ considerably. Tentatively the area may be stated at about 435,000 square miles, which is a little larger than the States of Nevada, Utah, Arizona, and New Mexico combined. The census of March 5, 1912 (which contains some estimates), returned a population of 5,072,604. Population of the larger cities and towns, according to the 1912 census (the figures relate to *municipios*, which usually comprise rather extended areas): Bogotá, the capital, 121,257; Medellín, a mining centre, 71,004; Barranquilla, head of the Magdalena River steamer service, a commercial town connected by 17 miles of railway with the Caribbean coast at Sabanilla, 48,907; Cartagena, the historical port of the Spanish Main, 36,632; Manizales, 34,720; Sonrón, 29,346; Pasto, 27,760; Cali, an important town, 27,747; Aguadas, 26,423; Ibagué, 24,693; Palmira, 24,312; Neiva, 21,852; Montería, 21,521; Yarumal, 21,250; Cúcuta, a coffee centre, 20,364; Bucaramanga, a coffee centre, 19,735; Miraflores (Boyacá), 19,150; Lorica, 19,005; Popayán, 18,724; Cartago, 18,618; Pereira, 18,428.

Education. Primary instruction is free, but not compulsory. In 1916, primary schools numbered 5137, with 325,756 pupils (176,468 males, 149,288 females) and 5733 teachers. Most of the secondary schools, though maintained or assisted by the state, are under the control of Roman Catholic orders. Secondary and professional schools in 1916 numbered 344, with 29,138 students (16,622 males, 12,516 females). In the 43 arts and trades schools there were 2360 students. There are several universities, of which the most important by far is the University of Bogotá, founded 1572. Bogotá has long been a conspicuous seat of Roman Catholic scholasticism. There are mining schools at Medellín and Pasto. Roman Catholicism is the state religion.

Production. The republic has an immense amount of fertile soil, but only a small proportion is under cultivation. Colombia's coastal and hot regions produce corn, sugar cane, cotton and other fibres, rubber, cacao, and bananas and other tropical fruits. The mountain and upland districts yield coffee, potatoes, wheat, barley, and many other products of the temperate zone. Tobacco and ivory nuts are important products, and banana culture is extending. By far the leading crop commercially is coffee, which amounts to about 1,000,000 sacks (of 60 kilograms). After Brazil, Colombia exports more coffee than any other country; the bulk of the crop goes to the United States. Cattle raising is a large and profitable industry, for which most of the country is suitable; in many sections the pastures remain green throughout the year. A stock census of 1915 places the number of cattle at 3,034,504; horses, 526,191; asses, 138,631; mules, 200,921; goats, 163,830; swine, 711,482.

Colombia's mineral resources are of exceptional importance, notably in the department of Antioquia, and include copper, lead, zinc, mercury, iron, coal, petroleum, salt, silver, manganese, gold, platinum, and emeralds. Gold is an important export and rich and extensive deposits await development. In the production of platinum, Colombia has been surpassed only by Russia. At present the world's supply of emeralds comes almost entirely from Colombia. Manufacturing has not become important, except the Panama hat industry, which in recent years has developed remarkably. Over four-fifths of the hats produced are sent to the United States. In 1917 there was a marked increase in business activity, due mainly to the stimulus of high prices for Colombian products.

Commerce. Import and export values are reported as follows:

	1910	*1913*	*1914*	*1915*
Imp.	$17,383,039	$28,535,780	$20,979,229	$17,840,850
Exp.	17,625,152	34,315,252	32,632,884	31,579,131

In 1914 and 1915 respectively, leading imports were valued as follows, in thousands of dollars: textile goods, 6785 and 6511; foodstuffs and condiments, 1974 and 2297; metals and their manufactures, 2670 and 1435; agricultural and mining implements and machinery, 897 and 891; drugs and medicines, 771 and 819; railway cars, etc., 1028 and 660; material for light and fuel, 555 and 607; paper, office supplies, etc., 566 and 508.

The following table shows export values by major groups, in thousands of dollars:

	1912	*1913.*	*1914*	*1915*
Vegetable products ...	20,792	23,975	17,756	17,585
Mineral products	7,769	5,515	6.878	6,837
Animal products	2,259	3,363	2.054	2,991
Manufactures	1,211	1,017	1,417	1,111
Live animals..........	151	86	18	121
Miscellaneous	32	48	33	13
Currency	8	312	1,484	...
Additional value *	...	...	3,495	2,898
Total.............	32,222	34,315	32,633	31,579

* Addition for market values over customs house values, coffee and hides.

The principal articles of export in 1914 and 1915 respectively were as follows, in thousands of dollars: coffee, 16,098 and 14,128; gold, 4746 and 5447; cattle hides, 2704 and 2901; bananas, 2988 and 1977; Panama hats, 1372 and 967; ivory nuts, 327 and 343; tobacco, 392 and 335; rubber, 175 and 253; gold coin in 1915, 511.

In 1914, imports from the United States were valued at $6.486,749; United Kingdom, $6,346,386; Germany, $2,570,424; France, $1,249,374. Exports by countries, in thousands of dollars:

	1912	*1913*	*1914*	*1915*
United States	15,833	18,862	18,272	21,946
United Kingdom	4,376	5,566	5,874	3,692
Venezuela	...	...	...	1,591
Spain	303	...	52	420
France	625	798	458	254
Germany	1,854	3,216	1,779	...
Additional value * ..	...	...	3,495	2,898

* See note to preceding table.

Communications. The roads of the country are in general merely mule tracks, but some of the main thoroughfares have been made usable for ordinary vehicles and automobiles. The great river of the country, the Magdalena, together with its tributaries, affords means for a considerable amount of traffic, but it is impassable at several points on account of rapids and has a bar at its mouth. The peculiar geographical features of the country render the construction of extended railway lines a very expensive and difficult undertaking. There is no continuous railway system, but various lines from 10 to 108 miles in length engage in local traffic. The total length of railway in operation is about 700 miles. A bridge over the river Coello at Chicoral, Department of Tolima, was to be erected for the Tolima Railroad under construction in 1917. In this connection the Minister for Public Works recommended that, when possible, a long iron span be constructed over the Magdalena River to connect the Girardot and Tolima Railroads.

There are about 12,000 miles of government telegraph lines, with 625 offices. Reported number of post offices, 843. Contracts have been made for establishing wireless-telegraph stations at Bogotá, Buenaventura, Medellín, Santa Marta, Cartagena, and the island of San Andres.

Finance. The standard of value is gold. The monetary unit is the dollar, valued at 97.33 cents. The redemption of the paper currency and the restoration of metallic money to circulation have been undertaken by the government. The value of the paper peso is fixed by law at one one-hundredth of the monetary unit, but its actual purchasing power is somewhat variable. Revenue and expenditure for fiscal years are shown below, in thousands of dollars (the figures for 1916 and 1917 are budget estimates):

	1913	*1914*	*1915*	*1916*	*1917*
Rev.	17,386	13,650	12,055	14,860	14,885
Exp.	15,532	14,772	12,825	17,115	16,870

Principal items of estimated revenue for the fiscal year 1916. in thousands of dollars: customs, 6600; salt tax, 1180; stamps, 850; telegraphs, 550; consular dues, 300. Chief departmental disbursements, as estimated for the fiscal year 1916, in thousands of dollars: finance, 5772 (including national debt service, 4607); interior, 5518; war, 2496; public instruction, 1103; public works, 946; foreign affairs, 345. Foreign debt, January 1, 1917, £3,817,787; internal debt, July 1, 1916, 4,557,781 dollars gold. There is a large outstanding paper currency.

Government. The legislative power is exercised by a congress of two houses, the Senate and the House of Representatives. Senators (35 in number) are elected by indirect vote for four years; representatives (92), by direct vote for two years. The congress meets at Bogotá on July 20 of each year. The executive authority is vested in a president, elected by direct vote for four years. He is assisted by a cabinet of eight members. There is no vice-president, but two *designados*, first and second, are elected annually by the congress to succeed to the presidency in case of the chief executive's death or disability. The president for the term ending August 7, 1918, is José Vicente Concha, who succeeded Carlos E. Restrepo August 7, 1914. See UNITED STATES, *Foreign Relations*.

COLORADO. POPULATION. The population in the State in 1910 was 799,024. The estimated population on July 1, 1917, was 988,320.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	532,000	10,640.000	$13.300,000
	1916	475,000	7,362,000	6,626,000
Wheat	1917	600,000	13,536.000	26.124,000
	1916	600,000	11,885,000	17,828.000
Oats	1917	293,000	11,134.000	8,462,000
	1916	290,000	9,570,000	5,742,000
Potatoes	1917	70,000	6.900,000	8,472,000
	1916	50,000	7,155,000	9,315,000
Hay	1917	970,000	*a* 2,376,000	39.442,000
	1916	970,000	1,988,000	21,868,000

a Bales of 500 pounds gross weight.

MINERAL PRODUCTION. The production of gold in the State in 1915 was valued at $22,414,944 and at $19,153,821 in 1916. There were produced in 1916, 7,656,544 fine ounces of silver, 70,914,087 pounds of lead, 8,624.081 pounds of copper, and 134,285,463 pounds of zinc. The total value of these metals was $49,200,675. The gold produced showed a decrease of $3,261,123, silver an increase of 628,572 ounces, lead an increase of 2,103,490 pounds, copper an increase of 1,511,544 pounds, and zinc an increase of 29,690,469 pounds. The net increase in the value of all metals was $5,773,978. In the production of gold Colorado ranks second, and is surpassed only by California. The coal production of the State in 1916 was 10,484,237 short tons, valued at $16,964,104, an increase of 1.859,257 tons, or nearly 22 per cent as compared with 1915. There were employed in the coal mines of the State in 1915, 12,372 men, compared with 13,104 in 1916. The supply of labor was in general adequate. The State is a considerable producer of petroleum. There were marketed in 1916, 197,235 barrels, which was a decrease of 5.39 per cent from the corresponding output for 1915.

The output of gold, silver, lead, and zinc in the State in 1917, according to the estimates of the United States Geological Survey, amounted to $16,020,000 in gold, 7,327,000 ounces in silver, 67,500,000 pounds of lead, 8,700,000 pounds of copper, and 114,000,000 pounds of zinc, with the total value of nearly $40,600,000, compared with a total value of about $49,200,675 in 1916. Copper showed an increase, but there were decreases in gold, silver, lead, and zinc output. The gold output of Cripple Creek was $10,549,000, a decrease of $1,570,000.

TRANSPORTATION. The railway mileage on June 30, 1916, was 5646 miles. The railroads having the longest mileage were: Denver and Rio Grande, 1579; Colorado and Southern, 808; Union Pacific, 591; Atchison, Topeka, and Santa Fé, 506.

FINANCE. The report of the State Treasurer for the biennial period ending November 30, 1916, showed a balance on hand on December 1, 1914, of $4,856,086. The receipts for the period amounted to $13,058,072, and the disbursements were $12,040,912, leaving a balance in the treasury on December 1, 1916, of $5,873,246. The total bonded indebtedness of the State at the end of the fiscal year amounted to $3,762,700.

EDUCATION. The latest school census for which statistics were available in 1917 was for 1915; in that year, there were 237,264 children of school age in the State. The total enrollment was 184,471, with an average daily attendance of 134,758. The total number of teachers in graded schools was 4121, of which 3401 were female and 720 were male teachers. In the rural schools there were 2452 teachers, of which 2122 were female and 330 were male. The average monthly salary of graded school male teachers was $103.44 and of female teachers $71.10. In the rural schools the average monthly salary of male teachers was $68.42 and that of female teachers was $60.20. The total disbursements for school purposes were, in 1915, $7,940,174.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include, the State Home for Dependent and Neglected Children; Soldiers' and Sailors' Home; Industrial Work Shop for the Adult Blind; State Home and Training School for Mental Defectives; State Insane Asylum; Industrial School for Boys; Industrial School for Girls; State Penitentiary; and the State Reformatory.

POLITICS AND GOVERNMENT. There were no elections in the State during the year, and political interest centred about the session of the Legislature. The most notable measures passed are given in the section *Legislation* below. On March 24, four days before President Wilson delivered his historic address at the joint session of Congress, and eight days before the declaration of a state of war with Germany, the governor called together a voluntary group of citizens to advise and aid in the direction of Colorado's war activities. The increase of Colorado's bean acreage from 38,000 to 243,000 acres, the rediscounting rates established by the banks, and other financial aid given the farmers through the State and county organizations are results evidencing success.

Following is some of the war work done by Colorado: The special legislature voted $2,500,000 war bonds. In all, 83,874 men between 21 and 30 were subjected to draft registration. The first call for the draft army conscripted 4800 men. Colorado National Guardsmen, numbering 4200, were federalized. The State subscribed $40,017,850 to the two Liberty loans, making a $40 per capita subscription. Voluntary enlistments in the army and navy totaled 20,550. Thrift stamp sales for government war purposes aggregated 200,000. The Y. M. C. A. raised $500,000 for war work. For the Red Cross war fund, $1,400,000 was raised. Membership in the American Red Cross in Colorado was increased by 155,000.

LEGISLATION. Tightening the screws on liquor selling by providing the machinery for the enforcement of the law, passing a generous appropriation for the support of its educational institutions, and marshaling all the resources of the Commonwealth for the successful prosecution of the war, the State of Colorado made the year 1917 one of the most conspicuous and brilliant in its history. Among the other important bills passed by the twenty-first legislature was the "pure seed law," of inestimable benefit to the agricultural interests of the State; a statute providing for State investigation and control of smelters; an appropriation for the equipment of the military forces of the State; the establishment of a State constabulary to take the place of the federalized National Guard; and a number of acts facilitating the coöperation of the State with the government's plans for the conservation of the Nation's resources. The school-fund-farm-loan law, whereby moneys derived from school funds can be drawn upon for loans to farmers, was upheld as constitutional by the State supreme court. The law was initiated by the *Great Divide*, a farmers' publication of Denver.

Amendments were made to the laws relating to election. Women voters are required only to state that they are over 21 years of age to register. Amendments were made to laws affecting liquor regulations. An industrial commission of the State was made a minimum wage board to fix the wages of women and minors under 18. Any person, who, under false pretenses, gains the labor of another, is made a swindler punishable by fine and imprisonment. Drastic penalties were imposed for the stealing of automobiles. The laws relating to property were amended.

STATE OFFICERS. Governor, Julius C. Gunter, Dem.; Lieutenant-Governor, James A. Pulliam, Dem.; Secretary of State, James R. Noland, Dem.; Treasurer, Robert H. Higgins, Dem.; Auditor, Charles H. Leckenby, Dem.; Adjutant-General, Frank J. Baldwin, Dem.; Attorney-General, Leslie E. Hubbard, Dem.; Superintendent of Education, Mary C. C. Bradford, Dem.; Commissioner of Insurance, Claude W. Fairchild, Dem.

JUDICIARY. Supreme Court: Chief Justice, S. Harrison White; Justices, S. H. White, W. A. Hill, M. S. Bailey, Tully Scott, James E. Garrigues, James H. Teller, Geo. W. Allen; Clerk, James R. Killian.

COLORADO, UNIVERSITY OF. A co-educational State institution of learning at Boulder, Colo. In the fall of 1917 there were 1175 students and 200 members of the faculty. Volumes in the library numbered 110,000. Productive funds in 1917 amounted to $75,000 and total income to $375,000. In 1917 ex-Governor H. S. Hadley of Missouri was made professor of law; Arthur Chapman of Denver, instructor in journalism; Thomas M. Marshall, assistant professor of history; Edwin W. Patterson, assistant professor of law; and William Black, professor of steam and gas engineering. The university was founded in 1876. President, Livingston Farrand, LL.D.

COLORATION. See ZOÖLOGY.

COLORED METHODISTS. See METHODISTS, COLORED.

COLUMBIA UNIVERSITY. A non-sectarian institution of learning whose principal buildings are at Morningside Heights in New York City. Allied corporations on this site are Barnard and Teachers College. The Medical School (College of Physicians and Surgeons) is on West Fifty-ninth Street, and the College of Pharmacy on West Sixty-eighth Street. The university also has a summer camp occupying more than 585 acres at Morris, Conn. In the fall of 1917 there were registered in all courses 6451 students as follows: Columbia College (academic department for men), 1185; Barnard College (academic department for women), 657; law, 199; medicine, 527; science, 77; architecture, 44; journalism, 72; business, 67; Teachers College, 2068; pharmacy, 524; graduate schools, 874; unclassified, 157. In addition to the above there were 4391 students in the extension classes, and 6144 were enrolled in the 1917 summer session. The faculty and administrative force, not counting sixteen retired officers, totaled 1074 as follows: Professors, 180; associate professors, 56; assistant professors, 113; clinical professors, 26; associates, 58; instructors, 280; curators, 3; lecturers, 72; assistants, 128; clinical assistants, 108; officers (not also teachers), 50. Volumes in the library number 675,000. The Bushe-Fox Collection of books and manuscripts in English Legal History was acquired by the library in 1917. In 1917 the income from all sources amounted to $3,248,683.61, made up as follows: from students' fees, $1,378,816.63; from endowment, $889,343.24; from special funds, $347,945.71; from gifts and from receipts for designated purposes, $194,849.63; from payments from allied corporations, $415,745.20; from miscellaneous sources, $21,983.20. By death the university lost in 1917 Thomas F. Main, secretary of the College of Pharmacy; B. Aymar Sands, trustee of the university; Mrs. Henry W. Munn, trustee of Barnard College; and George L. Rives, trustee of the university and chairman of the board for many years. Resignations from the teaching staff were received from Associate Professor Floyd J. Metzger (chemical engineering); Professor George E. Brewer (surgery); Associate Professor Homer F. Swift (medicine); Professor William G. MacCullum (pathology); Professor M. C. Whitaker (chemical engineering); Assistant Professor J. Gardner Hopkins (bacteriology); Assistant Professor Harold V. Keyes (physical education); Professor James F. Kemp (geology); Professor Charles A. Beard (politics); Associate Professor Henry R. Mussey (economics). Chairs held by Professor James McKeen Cattell (psychology) and Associate Professor Henry W. L. Dana (English) were declared vacant. New appointments included Thomas I. Parkinson to a newly established professorship of legislation in the Law School, made possible by a gift of $150,000 from Joseph P. Chamberlain; Fernand Baldensperger of the Sorbonne, professor of French literature; William Chandler Bagley, professor of education; Leo H. Baekeland and Ralph H. McKee, advisers in chemical engineering; Capt. R. Hodder Williams, instructor and adviser in military matters; Otis W. Caldwell, professor of education; Arthur D. Dean, professor of education. Of the teaching staff, George Willis Botsford, professor of ancient history, and Franklin Matthews, associate professor of journalism, died. Gifts to the university for the academic year ending June 30, 1917, were 154 in number, and amounted to $1,238,221.12, including $150,000 mentioned above for the Chair of Legislation; and $50,000 from George W. Brackenridge to enable provision to be made for the admission of women as students of medicine. The latter provided for the erection of a new building at the medical school. Other additions to the university plant include the Van Amringe Quadrangle, erected by the alumni in honor of the late J. Howard Van Amringe; and the Columbia War Hospital, erected on university-owned property in the Borough of the Bronx. Extension of the university work in 1917 included furtherance of plans for a medical centre in New York City; the establishment under the direction of Teachers College of the Lincoln (experimental) School for the purpose of scientific experimentation and constructive work in the reorganization of elementary and secondary education; and the creation of a department of religion, which put the direction of religious and social work in the hands of an administrative board. The Pulitzer prizes in journalism and letters and the Pulitzer traveling scholarships were awarded first in 1917. Eight productions of grand opera were given in the summer session by members of the chorus school and the orchestra of the Metropolitan Opera Company.

When diplomatic relations between Germany and the United States were severed, Columbia met in University Assembly. A plan of mobilization of the university's resources was drawn up and later approved by the Bureau of Edution of the interior department and submitted by the bureau to all colleges and universities in the country as a model. The university organized in April and completed early in the summer a war hospital with 500 beds, the equipment being doubled in capacity later in the year and turned over to the government as United States Army General Hospital No. 1. More than a thousand students of the undergraduate department took courses in military training, and more than 2000 left the university before June 1, 1917, to go into the military and naval arms of the government service. At the end of the year it was estimated that between 9000 and 10,000 Columbia alumni and former students were in government service. Leaves of absence were granted to approximately 200 members of the faculty to engage in war work. Columbia raised more than $50,000 in the Y. M. C. A. Friendship Fund campaign. A series of "war papers" illustrative of the university's part in the strictly non-military problems created by the war were issued to a reading public estimated at 20,000,000. Honorary degrees were conferred at a special university convocation on May 10 to Hon. Arthur James Balfour, Baron Cunliffe, René Viviani, and Marshal Joffre. Two complete ambulance units were donated by the alumni to the American Field Service in France. The government established on the campus in June a naval reserve school, the faculty of the engineering department providing instruction. This was later transferred to Pelham Bay and instead a gas engine school was established at Columbia for training, particularly in submarine-chaser work. An arrangement was made with the New York Nautical School for training in seamanship and instruction in navigation on the U. S. S. *Newport*, anchored in the Hudson River near the university. Women of the university were organized for service under the direction of a Committee on Women's War Work which placed before wives, daughters, and friends of members of the university opportunities for assisting the Navy Board; Bureau of Municipal Research; Red Cross and affiliated organizations; La Service de Santé; American Ambulance Corps; Home Economics Committee; National Surgical Dressings Committee; Trench Comfort Packets Committee; Committee on Training Camp Activities; War Service Bureau; U. S. Food Conservation Commission; Y. M. C. A.; Y. W. C. A.; Council of National Defense, etc.

Columbia University was founded as Kings College in 1754. President, Nicholas Murray Butler, Ph.D., Jur.D., LL.D., Litt.D.

See UNIVERSITIES AND COLLEGES.

COMETS. See ASTRONOMY.

COMMERCE. For foreign trade, see UNITED STATES and articles on foreign countries; for internal trade, see UNITED STATES and articles on various industries; see also FINANCIAL REVIEW.

COMMERCE COMMISSION, INTERSTATE. See RAILWAYS.

COMMERCIAL BUILDINGS. See ARCHITECTURE.

COMMISSION FOR RELIEF IN BELGIUM. See RELIEF FOR WAR VICTIMS.

COMMISSION GOVERNMENT. See MUNICIPAL GOVERNMENT.

COMMISSIONS AND BOARDS, FEDERAL. See UNITED STATES.

COMORO ISLANDS. See MAYOTTE AND THE COMORO ISLANDS.

COMPENSATION FOR WORKMEN. See WORKMEN'S COMPENSATION.

CONCILIATION, INDUSTRIAL. See ARBITRATION AND CONCILIATION, INDUSTRIAL.

CONCRETE. Concrete continued during 1917 as a leading structural material for architecture and engineering purposes. While there were a few shortcomings and mistakes to be noted, there was a vast record of successful achievements and many striking examples of the versatility of design and construction. In America, the desire for simplicity and size, particularly in industrial structures, had led to developments far in excess of anything accomplished or even contemplated by French and German designers, who at the beginning were more daring in their use of this material than architects and engineers in the United States. The wide span of floor slab was developed to a striking degree during 1917, and also the use of high columns as well as various modifications, some of which are indicated in the accompanying paragraphs.

ELEVEN-STORY WAREHOUSE FOR U. S. NAVY. A notable construction of the year was a reënforced concrete storehouse at the Brooklyn Navy Yard, capable of holding 7000 tons of supplies. This building 11 stories high, 180 ft. by 360 ft. in plan, and with monolithic-finished floors, was completed so far as the concrete frame was concerned, within fourteen weeks after the last piles were driven for the foundation footings. A labor force consisting of 500 men working one eight-hour shift a day with two 1-yd. mixers and hoists, was engaged continuously and completed several of the floors in four days and several in five days. The building was founded on 3776 concrete piles whose tops were at original ground level and a fill of four feet was placed between the external retaining walls underneath the first floor. The building was designed with rectangular outside and round inside columns, spaced 18 ft. centre to centre uniformly throughout the building, affording 60 rectangular columns and 171 circular interior columns, metal forms being used in constructing the latter. Motor trucks were used exclusively and as fast as one floor was finished, the construction below was pushed forward; in fact the curtain walls, tile partitions, stairs, steel sash, elevator intallation and trim were all begun after the fourth floor was completed and carried forward as progress was made.

MECHANICAL CONSTRUCTION OF CONCRETE PILES. The increased use of concrete for piles, poles, and similar purposes, naturally led to mechanical means for their manufacture. In Europe, a centrifugal process had been developed by which a cylindrical mold filled with concrete was revolved around a longitudinal axis until the concrete had been forced into a hollow cylinder and then duly set. During the year, a similar process was being carried on with considerable success in the United States on a commercial basis.

In this method, the lower half of a circular metal form was placed on rollers so as to connect with a machine by which it could be revolved in a horizontal position. This lower half of the form was filled with concrete material, a cage of reënforcing steel was adjusted in its position, and the upper half of the form was then clamped on the lower. The mold was rolled into the machine where it could be appropriately clamped and revolved for a period of several minutes at a high rate of speed. The effect of the centrifugal force developed, was to produce a pressure against the inside of the form varying from 75 to 300 lb. per sq. in. so that a dense concrete structure was obtained with a smooth central hole. After the set takes place in the cement, the pole is removed in the form and allowed to set for twelve hours before the mold is removed, and then to harden for ninety-six hours. A further period of ten days for curing is required before the finished pole can be shipped. The elimination of moisture in the centrifugal treatment and the intense pressure causes a dense and hard product, while the weight of a hollow centrifugal pole is 50 per cent less than a solid concrete pole of equal strength and only two and one-half times that of the best cedar poles, which were said to have but one-half of the strength of a concrete pole.

A CONCRETE COLD STORAGE WAREHOUSE. An eleven-story concrete cold storage warehouse was built during the year by the Merchants' Refrigerating Company on the Hudson River waterfront at Sixteenth and Seventeenth Streets and Tenth and Eleventh Avenues, New York City. This building had 10 stories and a basement, mezzanine, and attic. It was 150 ft. in height and covered an area of 1.4 acres, extending 184 ft. along Tenth Avenue and back to Eleventh Avenue, which was 286 ft. distant on West Sixteenth Street, and 357 ft. distant on West Seventeenth Street. The structure was of reënforced concrete frame throughout and was novel in that separate columns and intermediate walls were required for insulation to divide the building into five separate parts. This building was fully discussed in the *Engineering News-Record* for November 15, 1917.

NEW CHICAGO ORDINANCE. During 1917, the Chicago Department of Buildings revised a ruling on the design of the reënforced concrete flat-slab floor which had figured widely as a standard method of computing for this type of construction. The new ordinance changed certain features due to the development of the art, and the vast experience obtained in this type of construction. The new ruling was issued by Charles Bostrom, commissioner of buildings, and was to become effective January 1, 1918. It dealt in detail with columns, slab thickness, panels, stresses, walls and openings, beams, and indicated the general method of computing the stresses and the general design of the work in various systems of construction.

A LONG SPAN. In the design of the frame for twin buildings for the Emory University at Atlanta, Ga., a distinct novelty in concrete construction was a floor slab with a clear span of 37 ft. 6 in. Another innovation was a spiral stairway in one of the buildings and a roof girder of 52 ft. 2 in. span which not only carried the roof load but an 8-in. concrete partition which was deemed too heavy for the long floor span.

CONCRETE SHIPS AND BARGES. One of the important developments of the year has been the attention that has been paid to concrete ships, several of which had either been launched or were under construction in both Europe and America. Much of the information published in this field was sensational, but apparently there was no reason why concrete barges and motor-driven vessels of limited capacity should not be built with considerable success. A Joint Committee on Concrete Ships and Barges was appointed by the American Concrete Institute and the Portland Cement Association, and Robert W. Boyd was retained as consulting engineer. The members of the two committees were as follows:

American Concrete Institute—H. C. Turner, chairman; Leonard C. Wason, Robert W. Lesley, Charles R. Gow, M. M. Upson.

Portland Cement Association—E. D. Boyer, chairman; Joseph Brobston, F. W. Kelly, W. S. Mallory, S. P. Crabo.

An active investigation was being undertaken to determine the possibility of this type of construction. See SHIPBUILDING.

CONCRETE IN SEA-WATER. An interesting series of articles on the deterioration of concrete in sea-water with suggestions as to the cures was published in the *Engineering News-Record* (September 20, 1917, et seq.) during the year by Rudolph J. Wig of the United States Bureau of Standards and Lewis R. Ferguson of the Portland Cement Association. These experts made a two year investigation which included the inspection and study of nearly every cement structure in the United States and reports of many in foreign countries. Their conclusion was that in many cases a rapid deterioration would result from the unappropriate proportions of water in mixing the concrete, while there needed to be many modifications in the reënforcement and protection of concrete. The destruction of concrete structures which was in process along all American sea-coasts irrespective of whether freezing conditions existed or not, was due to a number of causes. All well made Portland cement would resist destruction in sea-water if properly used, but greatest care must be manifested in the entire process of mixing and placing. In particular these authorities determined that accurate proportions, judicious use of water, tight forms, and good contractors, and efficient inspection were needed to bring concrete to proper condition to resist sea-water action. They believed that concrete could be used successfully in sea-water, but the price of success was eternal care.

Testing a Floor to Destruction. An interesting test of a reënforced concrete eight-story warehouse building, which was being removed to clear the site for the new Union Station at Chicago, was made when four adjacent panels on the sixth floor were loaded with pig iron until failure took place. These panels were 19 ft. 4½ in. by 17 ft. 5½ in. centre to centre of columns and carried four-way reënforcement with 15 high-carbon steel bars ⅝ of an inch in diameter in each reënforcing band which was 7 ft. wide. The slab was 8½ in. thick made of gravel concrete 1:2:4. Various test loads consisted of pig iron stacked in four piles on each of the four panels and was applied in increments of about 200 pounds per sq. ft., until a total of 910 lbs. per sq. ft. was reached. The readings of deflection of concrete and steel were taken after each increment of loading. The maximum deflection was 1.1 in. and the approximate stresses at the maximum load were 31,000 lbs. in direct rods and 52,000 lbs. in diagonal rods. At the centre of the panel, 23,800 lbs. in direct rods and 18,400 lbs. in diagonal rods. The building was built in 1909 and 1910 and this test of destruction was made under the direction of Professor A. N. Talbot of the University of Illinois and aroused considerable interest.

See Architecture; Bridges; Building Operations; Cement; Elevators, Grain.

CONGO, Belgian. A central African colony of Belgium, formerly the Congo Free State; founded in 1885 by King Leopold II, who endorsed (October 18, 1908) its annexation to Belgium.

Area and Population. The colony covers an area of 2,365,000 square kilometres (913,127 square miles); white population January 1, 1912, 5465; January 1, 1915, 3525 (without Katanga and Kivu). No official estimate of native population is given; other sources vary from 9 to 20 millions. Besides Boma, important towns are Matadi, Banana, Leopoldville, Stanleyville, Kambove, Niangara, Bandundu, etc.

Production. The chief products of the country are shown in the list of exports, rubber leading in importance until 1914, when copper displaced it. The Kilo gold mine, in the Ituri basin, not far from Lake Albert, had 8 experts and 1750 negro workers. Gold is also found in the Katanga district. The output of the copper mines in 1915 was said to be 14,040 tons. Ivory is an important product; cattle thrive in the highlands.

Commerce. Total imports (general trade) in 1915, 18,361,325 francs (unofficial returns); exports, 25,504,175 francs. In 1911, 58,385,000 and 78,955,000 francs. In 1912, 61,864,000 and 83,465,000. Exports for comparative years are shown below, values in thousands of francs:

	1911	*1912*	*1913*	*1914*
Rubber	34,427	34,519	27,520	10,631
Copal	1,314	6,385	8,935	6,294
Ivory	5,683	5,552	11,675	7,092
Copper	1,834	4,112	3,685	15,520
Gold	3,119	3,332	6,000	3,195
Palm nuts	2,879	2,771	4,344	3,623
Palm oil	1,732	1,253	1,342	1,574
Cacao	896	1,115	1,036	...

The table below shows leading imports in 1914 and 1915, values in francs:

	1914	*1915*
Cottons	4,019,886	2,253,511
Provisions	2,983,892	4,778,145
Wines and spirits	2,155,094	817,098
Metals	1,156,609	30,752
Machinery	1,633,719	1,340,834
Sea vessels	1,670,192	129,900
Arms and ammunition	505,561	71,387

Imports in 1914 to the value of 22,309,228 francs came from Belgium, and exports valued at 5,344,918 francs went to Belgium; United Kingdom, 36,196,208 francs imports, and 11,346,915 francs exports; Germany, 3,001,982 imports; France, 886,711 imports; Netherlands, 682,446 imports and 801,713 exports; etc. There were entered at the ports in the 1915 trade, 64 vessels of 170,041 tons.

Communications. The total length of railways on January 1, 1916, was 1020 miles, divided as follows: Matadi-Leopoldville, 248 miles; Mayumbe Railway (Boma to Tshela), 70 miles; the Stanleyville-Ponthierville line, 77 miles: Kindu-Kongolo, 220 miles; Bukama-Luena, 25 miles; from the Rhodesian frontier to Lubudi *via* Elizabethville, 370 miles; the Katanga branch line to Lubumbashi, 1 mile; to Mikola, 9 miles. Two sections of the Cape-to-Cairo Railway are included in the system. The distance from Elizabethville, Katanga, on the Cape-to-Cairo Railway, to Cape Town is about 2300 miles. The total length of the Great Lakes Railway is 165 miles. It was completed in March, 1915, and links up the whole of the Upper Congo with the railway from Dar-es-Salaam to Ujiji.

The Congo is navigable for about 100 miles from its mouth to Matadi, and on this section there were 17 steamers government-owned. Above, for over 200 miles, are numerous rapids, which render the river unnavigable as far as Stanley Pool (Leopoldville), above which are 1600 miles of navigable water, as far as Stanley Falls.

Finance and Government. Financial statistics appear in the table below in thousands of francs for four years (budget estimates):

	1911	*1913*	*1914*	*1916*
Revenue	40,870	40,418	80,451	32,049
Expenditure	* 59,658	50,938	† 63,076	54,756

* Including 12,222,443 francs extraordinary.
† Including 11,189,573 francs extraordinary.

The total debt amounts to 278,747,200 francs. A governor-general administers the colony.

CONGO, French. See French Equatorial Africa.

CONGO FREE STATE. See Congo, Belgian.

CONGREGATIONALISM. According to official statements there were in this denomination in the United States at the beginning of 1917, 6089 churches, 5660 ministers, of whom 3684 were pastors and 1976 without charges, 795,793 church members and 773,028 Sunday school scholars. There were 3201 Young People's Societies, with 134,258 members, and 1590 Men's and Boys' Organizations, with 91,326 members. The home expenses of the churches of the denomination were $10,865,414. The amount of salaries paid was $4,974,612, an average of $1099 for each pastor. The value of church property was $92,282,943; invested funds amounted to $11,462,747; debts, $4,293,647. The national societies include the Congregational Educational Society, the American Board of Commissioners for Foreign Missions, the Congregational Home Missionary Society, the American Missionary Association, the Congregational national societies include the Congregational Ed- Church Building Society, the Congregational Board of Ministerial Relief, and the Congregational Sunday School and Publishing Society.

The woman's work of the denomination centres in the Woman's Home Missionary Federation as representing the homeland societies, and in the Woman's Board of Missions, as representing the foreign activities. The report of the Board of Commissioners for Foreign Missions showed that the year's receipts were the largest in its history—$1,207,126; and that the expenditures were $1,206,209. Despite this gratifying increase in receipts it was impossible to keep the income up to the urgent needs of these growing missions. The eighteen fields of the American Board are distributed in sixteen lands; seven of these, Turkey, Albania, Serbia, Bulgaria, Greece, Austria, and, until recently, Mexico, were ravaged by war; but notwithstanding this deplorable condition of world affairs missionary work went on in some cases with almost no interruption and in all cases with rewarding results. In Turkey missionaries were able carefully to distribute large sums of relief money. In the Balkan States schools were continued without interference and missionary life went on much as in peaceful times. Missionaries had to be withdrawn from Mexico; schools were closed and building undertakings were stopped. Nevertheless the Mexican pastors held their churches together and watched over their congregations faithfully. In lands not ravaged by war—China, Japan, India, Ceylon, and parts of Africa—the year was one of progress; but the call for help in China and the Philippines was very urgent.

The Home Missionary Society carried on work during the year in 27 States and Territories and the constituent State societies in 18 more. The number of missionaries was 1729, who cared for 2401 churches and preaching stations. Connected with these churches were 2186 Sunday schools. The receipts of the society for the year were $641,840. During the year 63 new churches were organized, 53 new church buildings were erected and 29 parsonages built. There were 10 theological seminaries in the denomination, with 72 professors and 466 students. The general administration of the church is under the control of the National Council. The social work is in the hands of the Social Service Commission of the Congregational Church, which is a development from the work of the Department of Labor and Social Service of the Congregational Brotherhood of America. The officers of the National Council for 1915-17 were: Moderator, Hon. Henry M. Beardsley; assistant moderators, Rev. William Horace Day and Rev. Alfred Lawless, Jr.; secretary, Rev. Hubert C. Herring; treasurer, Rev. John J. Walker.

Outside of the United States the number of Congregational churches, chapels, and stations was 14,666, with a membership of 1,711,796 and a Sunday school membership of 1,746,121. Of this total Great Britain and Ireland had a total of 5006 churches, chapels, and stations, 732,111 members, 757,820 Sunday school members. Canada had 159 churches, chapels, and stations, 13,834 church members, and 10,366 Sunday school members. Australasia had 483 churches, chapels, and stations, 21,760 church members, and 37,862 Sunday school members. South Africa had 290 churches, chapels, and stations, 20,920 church members, 8821 Sunday school members.

CONGREGATIONAL METHODIST CHURCH. This denomination was formed as the result of a secession in 1882 from the Methodist Episcopal Church, South. The reason for this was dissatisfaction with certain features of the Episcopal form of church government and of the itinerary. The seceders adopted the Congregational polity, but modified by a certain degree of connectionalism, and they chose the name Congregational Methodist Church. According to the latest statistics available the denomination in 1916 had 337 ministers, 333 churches, and 15,529 communicants. The publishing house is at Ellisville, Miss., the place of issue of *The Messenger*, the official journal of the denomination.

CONGRESS. See UNITED STATES; UNITED STATES AND THE WAR.

CONN, HERBERT WILLIAM. An American biologist, died in Middletown, Conn., April 18, 1917. Born at Fitchburg, Mass., in 1859, he graduated from Boston University in 1881 and three years later, as Ph.D., from Johns Hopkins. From then till his death he was a member of the faculty of Wesleyan University, rising to be professor in 1889. Dr. Conn also served as director of the Cold Spring Harbor (N. Y.) Biological Laboratory from 1889 to 1897, as bacteriologist of the Storrs (Conn.) Experiment Station from 1890 to 1906, and after 1905 as director of the laboratory of the Connecticut State Board of Health. An authority on the bacteriology of dairy products, he published more than 150 scientific memoirs and a number of books, ranging from popular presentations to highly technical treatises. Among them are: several text books on physiology and hygiene; *The Story of Germ Life; The Story of Life's Mechanism; Bacteria, Yeasts, and Molds in the Home; Agricultural Bacteriology; Bacteria in Milk and its Products; Biology; Social Heredity and Social Evolution.* In 1902 Professor Conn was honored by the presidency of the American Society of Bacteriologists.

CONNECTICUT. POPULATION. The population in the State in 1910 was 1,114,756. The estimated population on July 1, 1917, was 1,265,373.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	95,000	4,845,000	$10,417,000
	1916	70,000	3,010,000	3,612,000
Oats	1917	20,000	660,000	521,000
	1916	17,000	510,000	352,000
Potatoes	1917	29,000	110,000	164,000
	1916	22,000	95,000	175,000
Hay	1917	350,000	*a* 525,000	10,238,000
	1916	370,000	574,000	10,619,000
Tobacco	1917	21,000	*b* 29,540,000	11,343,000
	1916	22,200	36,186,000	9,770,000

a Tons. *b* Pounds.

TRANSPORTATION. The railway mileage in the State in 1916, the latest date for which statistics were available in 1917, was 999. There was practically no construction during 1917. The railroads having the longest mileage were: New York, New Haven, and Hartford, 850; Central New England, 83; Central Vermont, 58.

FINANCE. The total receipts for the fiscal year 1917 amounted to $15,386,999, the expenditures amounted to $10,212,175, leaving receipts in excess of expenditures amounting to $5,174,824. The bonded debt of the State amounted to $12,535,102. There were paid during the year $416,000 in bonds. At the beginning of the fiscal year there was a balance on hand of $507,561.

EDUCATION. The total school population of the State in 1915-16, the latest year for which statistics were available in 1917, was 302,026; the total enrollment was 234,609; the average daily attendance was 182,477. There were 6013 female and 410 male teachers. The average monthly salary of men teachers was $127.03 and of women $63.06. The total expenditures by towns for school purposes was $9,586,798.70.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the Soldiers' and Sailors' Home at Noroton Heights; Connecticut Hospital for the Insane at Middletown; State Hospital for the Insane at Norwich; State Prison at Wethersfield; School for Boys at Meriden; Industrial School for Girls at Middletown; Colony for Epileptics at Mansfield; and the Connecticut Reformatory at Cheshire for young men offenders. The School for Imbeciles at Lakeville was removed to Mansfield, and at the insane asylum of Norwich there was established a State farm for drunkards. A woman's reformatory was ordered.

POLITICS AND GOVERNMENT. The population of the State, in September, 1917, based on the enumeration of school children, was 1,410,193, an increase of 205,411 over that of the census of 1910. The enumeration of children between 4 and 16 years of age, for distribution of the State's fund for public schools, showed 314,614 in September, an increase of 12,506 in a year.

The chief interest of the State during 1917 was, of course, the war. Marcus H. Holcomb of Southington, retired from the superior court in 1914 because he had reached the Constitutional limit of 70 years, was elected governor in that year and again in 1916. Despite his years, Governor Holcomb put his State first in the country in preparation for the new conditions, and took his place among the spirited war governors in Connecticut history. Under his vigilant leadership, a complete census of the resources of the State in men and materials was begun three days after the break of relations with Germany, and a full card index at the end of the year held this information for ready reference. Under his lead the first home guard was established. This body consisted at the end of the year of 20,000 members, of whom 10,000 were armed and equipped. The guard was specially commended by the Federal War Department.

When the Federal government decided that wartime activities in the several States should be controlled by State councils of defense, the Connecticut State Council of Defense was appointed, with 11 members and R. M. Bissell, Yale 1883, president of the Hartford Fire Insurance Co., as chairman. The Council has subsidiary organizations in every county and town in the State, with headquarters at the Capitol in Hartford. The Legislature, in session from January 3 to May 17, 1917, passed probably the most far-reaching law on its books. It authorized the governor, in the war emergency, to take any steps he might deem necessary, as one result of which are the food supply committee and the council of defense.

Business in 1917 was very active, owing largely to the fact that in Connecticut was manufactured a great part of the munitions needed by the government. This accounted alike for the growth in population of the cities and the income of the State. Estimates show the size and growth of several cities as follows:

Cities	*Est. Pop.*	*Growth since 1910*
New Haven	161,817	28,212
Bridgeport	152,524	50,570
Hartford	129,358	30,484
Waterbury	101,660	28,519
Stamford	58,440	14,524

Many factories were made over for war uses, the skilled labor of the State had abundant work at high wages, and there were no serious disturbances. The patriotism of the people was suggested by the fact that at each sale of Liberty bonds Connecticut subscriptions exceeded the quota set for the State, and at the second call this was the only New England State to go above its limit. In the effort to raise $100,000,000 for the Red Cross, the quota set for this State was $1,500,000 and the subscriptions were practically $2,500,000. To the Y. M. C. A. subscription there were in the State 123,797 contributors. The amount set against the State was $800,000 and the amount raised was $1,393,633.

At the close of the fiscal year, 1914, the net debt of the State was $10,961,272. At the close of 1917 it had been reduced to $2,607,979. The sinking fund stands at $4,015,337.10, of which $2,300,000 has been invested in Liberty bonds. The revised taxation, established since Holcomb became governor, brought in last year the following large sums: Tax on corporation profits, $3,255,898; on the towns, $1,749,025; on steam railroads, $1,684,849; on street railroads, $749,142; automobile licenses, etc., $1,059,066; inheritances, $1,050,987. Among the large payments were $2,517,530 for highways, $1,213,739 for humane institutions, $1,103,383 for schools, $416,000 for state bonds, and for sinking fund $3,500,000.

The State had 8917 men in camp under the first conscription, and a record of about 4000 volunteers. From April 1 to the end of December there were 2388 enlistments in the U. S. Navy. The militia consisted of 241 officers and 6652 in the ranks, and, as noted, in the home guard 20,000 men above military age.

Governor Holcomb appointed two members of the Supreme Court of the State and five of the superior court. Justice J. M. Thayer reached 70 years, and was succeeded by the promotion of Judge M. A. Shumway from the superior court. As he was soon to reach the age of 70 his successor was announced before the end of the year in the person of Judge E. B. Gager. Judges Shumway, Gager, W. L. Bennett of New Haven, W. H. Williams of Derby, and Joseph P. Tuttle of Hartford retired from the superior bench and were succeeded by Donald T. Warner of Salisbury, Frank D. Haines of Middletown, John P. Kellogg of Waterbury, John E. Keeler of Stamford, and W. M. Maltbie of Granby.

Municipal elections in various cities resulted in the election of Republican mayors in Bridgeport, Putnam (succeeding a Democrat), Rockville, Waterbury (succeeding a Democrat), and Willimantic (succeeding a Democrat); and Democratic mayors in Bristol, Danbury, Meriden, Norwalk, and New Haven. The last two cities chose Democrats to succeed Republicans. In the voting in the fall on the question of license, two towns went from "dry" to "wet," and 11 from "wet" to "dry," leaving the situation 100 dry, and 68 towns wet. All the large cities are "wet."

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below.

Laws relating to the administration of justice were amended, especially those relating to the employment of councils. Provision was made for the purchase and sale of food by designated officials. Measures were also passed regulating the details of the manufacture, storage, and handling of explosives. A proposed constitutional amendment granting woman suffrage was referred to the legislature of 1919. The hours of labor for women in certain employments were fixed at 58 per week. Persons detained more than five minutes at a railroad crossing are entitled to recover $25 from the railroad. The approval of the secretary of the State Board of Charities is required before solicits for the support of any religious or charitable cause may be made. Provision was made for health and old age insurance in employments relating to labor and agriculture. The banking laws of the State were amended in important details. Provision was made for a teachers' retirement system and several other measures relating to education were passed. Provision was made for the combination of schools and school districts in connection with the needs of the communities affected. See PENOLOGY.

STATE OFFICERS. Governor, Marcus H. Holcomb; Lieutenant-Governor, Clifford B. Wilson; Secretary of State, Frederick L. Perry; Treasurer, Frederick S. Chamberlain; Comptroller, Morris C. Webster; Attorney-General, George E. Hinman; Adjutant-General, Brig. Gen. George M. Cole; Commissioner of Insurance, Burton Mansfield—all Republicans except Mansfield and Bennett, not stated.

JUDICIARY. Supreme Court: Chief Justice, Samuel O. Prentice; Associate Justices, George W. Wheeler, John M. Thayer, Alberto T. Roraback, John K. Beach; Clerk, Geo. A. Conant.

CONNOR, SELDEN. An American soldier and public official, died July 9, 1917, at Augusta, Me. He was born at Fairfield, Me., January 25, 1839, and graduated at Tufts College in 1859. He enlisted in the First Vermont Infantry after the beginning of the Civil War, became lieutenant colonel of the Seventh Maine Infantry in August, 1861, and in January, 1864, was promoted colonel of the Nineteenth Maine Infantry. On June 11, 1864, he was made a brigadier general of volunteers. He took part in the Battle of the Wilderness, where he was wounded, and in the early part of 1866 he was honorably mustered out. In 1869 he was appointed assessor of internal revenue; was Governor of Maine, 1876-78; United States Pension Agent in 1882-86; and in 1897-1914. In 1890 Gen. Connor was president of the Society of the Army of the Potomac. On October 3, 1889, he delivered the oration at the dedication of the Maine monuments at Gettysburg.

CONSCRIPTION. See CANADA; MILITARY PROGRESS; UNITED STATES; UNITED STATES AND THE WAR.

CONSERVATION OF NATURAL RESOURCES. See DRAINAGE; FORESTRY; IRRIGATION.

CONSULAR SERVICE. See UNITED STATES.

CONSUMPTION. See TUBERCULOSIS.

CONTAGIOUS DISEASES. See VITAL STATISTICS.

CONVICT LABOR. See PENOLOGY.

COÖPERATION. The war greatly stimulated the development of coöperation especially the formation of coöperative buying associations, throughout the world. In the United States the coöperative movement took a great variety of forms ranging from the coöperative purchase of expensive machinery and live stock by farmers to the formation of small local coöperative clubs in cities for the purchase of milk, coal or some other important article. Among farmers, both coöperative buying and selling had grown rapidly, especially among the growers of articles the favorable production of which was somewhat localized, as among tobacco growers in Virginia and Kentucky, potato growers of Maine and Virginia, onion growers of Texas, citrus fruit growers of Florida and California, and apple growers of Oregon. Two developments of 1917 were especially noteworthy. One was the development of coöperative associations among the employees of corporations. Thus the employees of the Hot Point Electrical Heating Company of Ontario, Cal., formed an association comprising 500 members for the running of a coöperative store. Space, equipment, light, heat, and janitor service were furnished by the company. Orders by members were made on special blanks and deposited in a designated box in the morning. The storekeeper filled these orders, goods being carried home by the employees at noon or in the evening. Goods were sold at 10 per cent above wholesale price; the saving was estimated at 15 per cent.

Another development was the growing interest of trade unions in the possibilities of coöperation. The American Federation of Labor (q.v.) at its annual convention and various local unions strongly approved the coöperative movement. The United Mine Workers of America actively stimulated the formation of coöperative stores among miners. Thirty-one stores had been organized by January, 1917, on the Rochdale plan. The miners also had organized coöperative medical service and in one instance a hospital had been erected at the cost of $50,000.

FEDERATION. There were numerous evidences of a tendency toward the federation of coöperative societies and the imminent prospect of the formation of a wholesale coöperation society in America. Under the lead of the Coöperative League of America a convention of Eastern States Coöperative Societies was held in New York on November 24. A more important convention was held in October at Staunton, Ill., attended by managers and officers of at least 100 coöperative retail societies. They met in a coöperatively owned labor temple; representatives were present from the Central States Coöperative Society, Finnish societies in Michigan, farmers of the Northwest, and miners' organizations of West Virginia and Iowa, besides the Coöperative League of America which has headquarters in New York City. Steps were taken toward the development of relationships between United States and Canadian societies and the consolidation of efforts toward a wholesale society.

United Kingdom. The number of coöperative retail societies in Great Britain and Ireland somewhat exceeded 1500 with a total membership of over three million families. They included fully one-fourth of the entire population. They are grouped under three wholesale societies, English, Scottish, and Irish. These wholesale societies have so extended their activities that they handle many articles from the earliest processes of production to the consumer. They own steamship lines, tea lands in Ceylon, olive groves in Africa, currant establishments in Greece, and raisin plants in Spain. They manufacture numerous articles such as soap, shoes, textiles, jams and preserves, flour, bread and bakery products, and many others. The increasing cost of living due to the war greatly increased the reliance upon their activities. Especially interesting was the very marked increase in the interest of trade unions in the advantages of coöperative buying. For the second quarter of 1917, according to the *Labor Gazette*, the total transactions of all three wholesale societies in both distributive and productive departments aggregated £26,916,729 ($134,000,000). The distributive departments sold in these three months more than $100,000,000 worth of goods. This was an increase of 22.2 per cent over the same quarter of 1916 and of 123 per cent over the same quarter of 1912. The productive departments showed an increase of 31 per cent over 1916 and of 163.7 per cent over 1912.

The English Coöperative Wholesale Society began in November, 1916, the publication of the *Monthly Producer*. The Coöperative Union began in January, 1917, the publication of the *Cooperative Educator*, to serve as a link among the voluntary teachers of coöperation and to provide study circles with appropriate material. In Ireland the coöperative movement had extended much beyond retailing and had become the keynote for the reorganization of agricultural life and peasant opportunities. The Coöperative Reference Library at Dublin has in consequence grown rapidly and collects material of interest from all countries. The annual Cooperative Congress of which the 49th session was held in June, 1917, publishes an elaborate report, that of 1916 comprising nearly a thousand pages. See Agricultural Credit; also paragraph on *Credit Unions* under Remedial Loans.

Japan. The development of coöperating societies in Japan in the last decade has been truly remarkable. On January 1, 1907, there were a total of 2470 coöperative societies in that country, but on January 1, 1916, there were 11,509. Thus of credit associations there were 1202 on the earlier date and 3015 on the later. Societies engaged in coöperative selling grew from 126 to 234; purchasing societies increased from 446 to 535; credit and purchase societies increased from 41 to 2582; credit sale and purchase societies increased from 24 to 2609; and credit sale, purchase, and productive associations grew from 5 to 946. The only type of society that had failed to increase decisively in number was that combining purchasing and production.

COPPER. The copper production in the United States in 1916, surpassed all previous records, according to the United States Geological Survey. The average price (i.e., *actual* not *quoted* price) during the year was $0.246 a pound, and at this price the output for the year had the value of $474,288,000 compared with $242,902,000 for the output in 1915. The output of blister and regular copper from domestic ores was 1,928,000,000 pounds in 1916 compared with 1,388,000,000 pounds in 1915. The output of refined copper from primary sources, domestic and foreign, for the year 1916 was 2,259,000,000 pounds compared with 1,634,000,000 pounds in 1915. The production of copper from the mines in 1916 was more than double that of 10 years previous, and more than four times that of 20 years previous. The profit resulting from the domestic production was far greater in 1916 than in any previous year or in 1917. It probably exceeded $300,000,000.

At the beginning of 1916 there were about 82,400,000 pounds of refined copper in stock in the United States. This quantity added to the refinery production gave the total available supply of about 2,341,000,000 pounds of refined copper. Deducting from this the exports for the year, domestic consumption was materially greater than the 1,043,000,000 pounds in 1915, being 1,430,000,000 in 1916. The average price in copper in 1916 (0.246 per pound) showed a marked increase over that of the preceding year ($0.175).

The imports of unmanufactured copper of all forms for the first 10 months of 1917 amounted to 460,780,000 pounds, as against 397,594,000 pounds for the first 10 months of 1916. The imports for the year 1916 were 462,335,000 pounds.

The exports of pigs, ingots, bars, plates, sheets, rods, wire, and like copper products for the first 10 months of 1917 amounted to 953,876,000 pounds; the exports for the first 10 months of 1916 were 655,473,000 pounds.

1917 Production. The production of copper in 1917 was slightly less than in 1916, according to the preliminary figures and estimates of the United States Geological Survey, from all plants that make blister copper from domestic ores or that produce refined copper. At an average price of 27 cents a pound the output for 1917 had a value of $510,000,000, as against values of $475,000,000 for 1916 and $190,000,000 for 1913. The figures showing the smelter production from domestic ores represent the actual output of most of the companies for 11 months and the estimated output for December. The production of blister and Lake copper from domestic ores was 1,890,000,000 pounds in 1917, against 1,928,000,000 pounds in 1916 and 1,224,000,000 pounds in 1913.

The output of refined copper (electrolytic, Lake, casting, and pig) from primary sources, domestic and foreign, for 1917, was estimated at 2,362,000,000 pounds, compared with 2,259,000,000 pounds for 1916 and 1,615,000,000 pounds for 1913.

At the beginning of 1917 about 128,000,000 pounds of refined copper were in stock in the United States. By adding this quantity to the refinery output of the year it will be seen that the total available supply of refined copper, exclusive of secondary copper, was about 2,490,000,000 pounds. By subtracting from this quantity the exports for the first ten months and the estimated exports for the last two months, and assuming no change in stocks, it will be seen that the supply available for domestic consumption in 1917 was materially less than the 1,430,000,000 pounds available in 1916.

The actual production in 1917 excluding casting copper, was a little less than 2,300,000,000 pounds. In other words the United States at the end of 1917, possessed adequate capacity for refining for all needs provided it could be worked at maximum efficiency, a condition which on account of labor and other difficulties was practically impossible of realization at the time.

Production by States. Arizona produced 687,800,000 pounds, a slight decrease from the production in 1916, which was 694,800,000 pounds. Montana produced 278,000,000 pounds as against 352,000,000 pounds in 1916. Michigan produced 275,000,000 pounds, an increase over the 269,794,000 pounds produced in 1916. Utah produced 245,000,000 pounds, as compared with 232,000,000 pounds in 1916. Nevada produced 110,000,000 pounds, an increase over the 100,000,000 pounds produced in 1916. Alaska, with a production of about 87,500,000 pounds, showed a large decrease from the previous year. New Mexico increased its production to 104,500,000 pounds from 79,800,000 pounds in 1916. The production of California was considerably above the 43,400,000 pounds produced in 1916. The production in Tennessee did not differ greatly from the production in 1916, which was 14,500,000 pounds.

Imports and Exports. The imports of all forms of unmanufactured copper for 1916 amounted to 462,336,000 pounds. This compared with an import of 315,698,000 in 1915. The exports of copper in all forms for 1916 amounted to 784,006,000 pounds. The exports for the 12 months of 1915 were 681,918,000 pounds.

World's Production. *The Engineering and Mining Journal* in its annual statistical summary presented the accompanying table of world's production of copper in 1917 which showed a material increase, but nothing in comparison to that for 1916 over 1915. Japan, however, was a noteworthy source of increased copper supply, as were also Canada, Australia, Peru, Chile, Japan, and Africa.

THE WORLD'S PRODUCTION OF COPPER
(In metric tons—2204 lbs.)

Country	*1914*	*1915*	*1916*	*1917*
United States	525,529	646,212	881,287	856,570
Mexico	36,337	30,969	55,128	48,827
Canada	34,027	47,202	47,985	50,351
Cuba	6,251	8,836	7,816	9,622
Australasia	37,592	32,512	35,000	38,100
Peru	27,090	32,410	41,625	45,620
Chile	40,867	47,142	64,636	75,345
Bolivia	1,306	3,000	4,000	4,000
Japan	71,046	76,039	101,467	124,306
Russia	32,262	25,881	20,887	16,000
Germany	30,480	35,000	45,000	45,000
Africa	24,578	27,377	34,572	37,315
Spain and Portugal	37,099	46,200	42,000	42,000
Other countries	25,176	25,000	25,000	25,000
Totals	929,649	1,083,730	1,406,353	1,413,056

Trade Conditions. The trade conditions in the copper market varied during the year. The average price in New York was 27.180 cents per pound, starting in January with a price of 28¾ cents and increasing until in March, a maximum of 37 cents was secured. On March 21, it was announced that the copper producers had agreed to furnish the United States government with about 45,000,000 pounds of copper at 16⅔ cents for deliveries extending 12 months from April 1. From the time of the entrance of the United States into the war, the copper situation was complicated, and there was a decrease in prices. In June, there was a serious strike at Anaconda, and Secretary of the Navy Daniels stated that he intended to leave the price of copper for government requirements to be determined by the Federal Trade Commission. The action of the government was uncertain during the summer, and the fact that a large contract which had been negotiated with a foreign government in previous years had been filled, also complicated the situation. In July and August, there were strikes in Montana and Arizona which seriously curtailed the production and the refinery at Great Falls was closed. (See Strikes.) The Federal Trade Commission was examining the books of the producers to find out the actual cost of production and the price to the government was in dispute in various quarters. The War Industries Board had agreed to advance a price to the copper producers of 22½ cents, leaving the difference between that price and 25 cents to be settled after the Federal Trade Commission had reported. The government was receiving adequate supplies of copper, but payment was deferred to a future basis of adjustment, so that the government was owing the producers about $10,000,000. Towards the end of the summer, the supplies of crude copper were diminishing with the suspension of operations in the mines, and the Anaconda Company closed its Washoe and Great Falls plants while the Raritan refinery in New Jersey and others were running at considerably less than full capacity. On September 6, the War Industries Board bought about 77,000,000 pounds of copper for the Allies which advanced the market, and finally the price of 23½ cents was fixed by agreement of the War Industries Board and the copper producers.

The Copper Producers' Committee was organized to administer the control and distribution of the industry, the actual business being done through the United Metals Selling Company dealing with the United States government, and the American Smelting and Refining Company which dealt with foreign countries, thus being the clearing-house for the business. With the march of events conditions in the copper industry improved, especially as manufacturers did not demand exorbitant stocks, and in December the government and producers were again in conference respecting the continuation of the agreement made on September 21 for four months further, but no conclusion was reached. With a large demand for copper, the costs of production under unfavorable circumstances naturally set the price, and while copper was demanded, there were a number of producers who believed that they were unable to produce at the price set by the government in its various conferences. See Strikes.

CORN (Maize). The world's average annual production of corn in normal times is about 3,825,000,000 bushels. During the eight years ending 1917 the 4-billion bushel mark was surpassed three times, and taking the heavy crop of the United States in 1917 into consideration and, further, that over 70 per cent of the world's crop is produced there, complete data, if available, would probably have shown another 4-billion bushel yield. According to provisional figures published by the International Institute of Agriculture, Rome, seven countries in the northern hemisphere produced 3,314,344,000 bushels, or 22.7 per cent more than in 1916. In this estimate Austria-Hungary, Mexico, and Rumania, which in normal times produce about 6 per cent, 5 per cent, and 3 per cent of the world's crop, respectively, were not included. The yield of Italy was placed at 86,680,000 bushels and that of Spain at 27,580,000 bushels. The Italian crop was estimated by other authorities as about 30,000,000 bushels short of meeting the requirements of the country. The Canadian crop was estimated at 6,193,000 bushels, valued at $7,000,000, and in addition corn grown for fodder was valued at $10,000,000. The corn grown for grain was only about one-half the usual yield.

As estimated by the Department of Agriculture, the United States produced 3,159,494,000 bushels on 119,755,000 acres, both production and acreage never having been surpassed. The average yield per acre was 26.4 bushels as compared with 24.4 bushels the year before and with 26.1 bushels as the average for the five years 1911-15. The average farm value of corn on December 1, 1917, was reported at $1.28 per bushel, as against 88.9 cents December 1, 1916. The total value of the crop on this basis was $4,053,672,000, or greater by $1,772,943,000 than the value of the crop of 1916 and by $2,409,161,000 than the average value for the five-year period 1911-15. Although a record crop was produced heavy losses were sustained as the result of a late cold spring, a cold and dry summer in the greater part of the corn States west of the Mississippi, a protracted drouth in the southern plains region, and frosts beginning about September 10 and extending over large areas of the corn belt. The total loss from frost damages was estimated at 14 per cent as to yield and at 21 per cent as to quality. As the result large quantities of corn remained soft and could not be cribbed but had to be used for feeding direct from the field. The loss was mitigated to a large extent by the fact that owing to the lack of old corn it was necessary to draw on the new crop and that much of the frosted corn was cut and placed in the silo.

A study made by the Department of Agriculture of the 1915 and 1916 crops showed that in round numbers from 41 to 43 per cent of these crops consisted of white corn, approximately 43 per cent of yellow, and 14.5 to 16 per cent of mixed corn. White corn preponderated in the South and yellow in the North. It was also brought out in this connection that in the South white corn sells for about 3 cents a bushel higher than yellow corn, while in the North there is practically no difference in price. Mixed corn sells for about 2 cents a bushel less than yellow in the North and nearly 4 cents below white in the South.

In common with other cereals, corn was subject to export regulations in practically all countries of the world. In the European belligerent countries and their dependencies the export of corn and corn products was either prohibited or so regulated that the supplies were assured to them or their allies. In many countries the prices were fixed officially for requisition by governments and also for ordinary transactions. Ocean freight rates reached a record height. The rate from New York to Liverpool in November, 1917, was $40.07 per metric ton (2204 pounds), as compared with $18.84 in 1916 and $2.115 in 1913. From Buenos Aires to Great Britain the November, 1917, rate was $30.53 and from Kurrachee, India, to Great Britain $69.48 per metric ton.

CORNELL UNIVERSITY. A non-sectarian institution for higher education, at Ithaca, N. Y. On November 1, 1917, there were enrolled in all departments (excluding duplicates) 3859 students; there were 750 members of the faculty. The voluntary enlistment or conscription of students caused a diminution of about 30 per cent of the normal enrollment. The library contained 489,656 volumes. Productive funds at the end of the fiscal year 1917 amounted to $15,198,968 and the annual income therefrom to $736,904. In addition the New York State College of Agriculture received $638,187 and the New York State Veterinary College, $70,861 from the State of New York. In 1917 occurred the deaths of Charles L. Crandall, Professor Emeritus of Railway Engineering and Geodesy; George W. Harris, Librarian emeritus; and Henry A. Sill, Professor of Ancient History. Notable gifts received during the year were $500,000 from Col. Oliver H. Payne of New York for the Medical College; $54,000 from the Cornell Alumni Fund for the general support of the University; $50,000 from George F. Baker of New York to complete his gift of $350,000 for residential halls. In May, 1917, was established a United States School of Military Aëronautics and in the fall of the year the university turned over to that school the New York State Drill Hall, a building erected on the campus by the State of New York for the University's department of Military Science and Tactics and just completed at a cost of $350,000. President, Jacob Gould Schurman, LL.D., Sc.D.

CORPORATIONS. See Taxation; Trusts.

CORPORATION TAX. See Taxation.

CORRECTION. For matters connected with this subject see Charities.

COSTA RICA. A Central American republic between Nicaragua and Panama. It borders the Caribbean Sea on the east and the Pacific Ocean on the west and south. Capital, San José.

Area and Population. The estimated area is 18,691 square miles, which is about equivalent to the combined areas of New Hampshire and Vermont. The population as calculated for December 31, 1915, was 430,701, distributed by provinces as follows: San José, 131,332; Alajuela, 101,783; Cartago, 64,659; Heredia, 46,162; Guanacaste, 40,806; Limón, 23,756; Puntarenas, 22,203. The white inhabitants dwell mostly in the larger towns. On the banana plantations, mostly in Limón province, are some 18,000 colored British West Indians. Estimated population of the city of San José, about 35,000 (with suburbs, 47,500); Cartago, 12,900; Heredia, 8200; Limón, 7000; Puntarenas, 5000; Liberia, 2500. Marriages in 1914 and 1915 respectively, 2178 and 1929; births, 18,633 and 18,700; deaths, 9482 and 9445; immigration, 8995 and 3886; migration, 8908 and 4860.

Education. Elementary instruction is free and nominally compulsory. In 1915, elementary schools numbered 419, with 1489 teachers and

34,703 pupils enrolled; average attendance, 32,059. There are a few institutions for secondary and for professional education. In 1915 a normal school was established at Heredia and has already won an excellent reputation. Roman Catholicism is the state religion, but liberty of conscience and worship prevails.

Production. Costa Rica's leading crops commercially are bananas and coffee. Its banana industry, along the east coast, has developed rapidly and in 1917 surpassed that of the other Central American countries, producing annually upwards of 11,000,000 bunches, mostly exported to New Orleans, Mobile, New York, and Boston. Costa Rican coffee is prized for its quality; the export in 1914-15 was 12,206 metric tons and in 1915-16, 16,844 metric tons. Cacao and sugar cane are valuable crops; other crops, of local importance, are corn, beans, potatoes, and rice. Cattle raising is a profitable industry, especially in the west and in the districts adjoining Nicaragua. The number of cattle in 1915 was about 337,000. There are large quantities of cedar, rosewood, mahogany, and other cabinet woods, but this exploitation is little developed. There is some mining of manganese, silver, and especially gold.

Commerce. The reported value of imports in 1915 was $4,478,782, and of exports $9,971,582; in 1916, $6,731,273, and $11,121,172. Leading imports are cotton goods, wheat, flour, lard, drugs, rice, and coal. The reported value of the bananas exported in 1914 was 10,162,912 colones, and in 1915, 9,521,648 colones (the colon represents about 47 cents); coffee, 10,028,731 and 8,022,166; gold and silver in bars, 1,910,965 and 1,733,111; cacao, 181,736 and 375,934. Trade by countries, in thousands of dollars:

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
United States	3,082	4,677	4,917	6,881
United Kingdom.......	549	791	4,438	3,668
Spain	119	163	...	...
France	84	180	63	98
Total, incl. others..	4,479	6,731	9,972	11,121

Communications. The total length of railway in operation, as reported in 1916, is 431 miles (693 kilometres), including branches and sidings. The main line extends from Limón, on the Caribbean, to San José, a distance of 103 miles, and San José is connected with the Pacific port of Puntarenas by a line 69 miles long. In Costa Rica, a project for the construction of a railway from Alajuela to Grecia, a distance of about 16 miles was under discussion in 1917. A proposition of P. W. Chamberlain an American engineer, was to put down a 30-inch gauge track, making foundation on that basis, with an agreement to change to a 42-inch gauge after 20 years. The government desired the foundation to be made at once for a 42-inch gauge, although conceding the use of the narrow gauge for 20 years. The concession was to be for 99 years, the government agreeing to advance bonds for $3000 American gold per mile, or a total of $75,000, secured by direct tax on the region benefited. The contract was subject to the approval of Congress which would meet in regular session in May, 1918. The railroad would require additional equipment as follows: Three 12-ton locomotives, twenty-five 8-ton freight cars, enough 20-pound rails for 15 kilometres (9 miles), telegraph and telephone supplies, and other necessary equipment.

Telegraph lines aggregate over 1500 miles; offices, 147. There are two radiotelegraph stations. Post offices, 208.

Finance. The standard of value is gold. The monetary unit is the colon; its par value is 46.536 cents. Revenue and expenditure, in thousands of colones (figures for 1916 and 1917 are budget estimates):

	1912	*1913*	*1914*	*1915*	*1916*	*1917*
Rev.	9,951	9,613	8,602	6,834	7,563	7,485
Exp.	9,311	10,184	9,742	9,156	8,982	9,068

Principal estimated receipts for 1917: customs, 3,711,000 colones; liquors, 2,000,000; Pacific Railway, 838,000; telegraphs, 294,000; export duty on bananas, 210,000. Larger departmental disbursements, as estimated for 1917: treasury and commerce, 3,504,670 colones; public instruction, 1,319,887; fomento, 1,227,355; war, 1,136,104; interior, 1,027,896; justice, 316,620.

Public debt as reported outstanding December 31, 1915; foreign, 35,302,033 colones; internal, 3,186,069; floating, 6,618,295; total, 45,106,398.

Government. A new constitution was promulgated July 13, 1917. It provides that the president and vice-president shall be chosen for six years by an electoral college consisting of both houses of the Congress, representatives of municipalities, ex-presidents of the republic, judges, and cabinet officers. On May 8, 1914, Alfredo González Flores was inaugurated president for four years in succession to Ricardo Jiménez.

History. The president, Gonzáles Flores, whose course had aroused much opposition in the country was finally deposed on January 27 by the military forces at the capital. The revolution according to its leaders resulted from the design of the president to secure his reelection. It was said to be his endeavor to retain his position for another term contrary to the constitution. A further grievance alleged against him was his threat to introduce a new system of taxes to which the people were opposed. The deposition was effected without disorder and the president was not molested. He took refuge in the American legation. He had been chosen president by Congress in May, 1914. After his overthrow a provisional chief executive was created in the person of minister of war, Federico Tinoco Granados, and a provisional cabinet was appointed. On April 11 he was elected president. On February 21 the American minister at Costa Rica declared that the government of the United States had regarded this change with grave concern and believed that any legal acts of this nature would disturb the peace of Central America; it therefore declared that it would not give recognition or support to any government that was established unless it proved that it had been elected by legal and constitutional means. Toward the end of May alleged proofs of a conspiracy between German agents and former president Gonzales were made public. Meanwhile on April 12 the Costa Rican government had placed its waters and ports at the disposal of the United States for war purposes. On April 26 it canceled the letters patent of all Germans in its consular service. By this time also it had organized a guard service along the coasts and boundaries as a protection against German activities.

COST OF LIVING. See PRICES.

COTTMAN, VINCEDON L. He died at Washington, March 15, 1917. He was born at Riverside, La., Feb. 13, 1852. He entered the academy at Annapolis from New York in 1868 and was graduated in 1872. He served in the Spanish-American War as a lieutenant on the *Alert* and *Brutus*, and was promoted to be captain in 1907. In the same year he was made commander of the armored cruiser, *California*. He was promoted to be rear admiral in 1910.

COTTON. On December 11, 1917, the Bureau of Crop Estimates of the United States Department of Agriculture estimated the 1917 cotton crop of the United States, exclusive of linters, at 10,949,000 bales of 500 pounds each, a reduction of about 5 per cent from the crop of 1916. The estimate of the International Institute of Agriculture at Rome on November 17, 1917, was for a crop in the United States of 12,046,800 bales. Other estimates of about 13,000,000 bales, including linters, were made. All these estimates were below the 5 year average production as reported by the Bureau of the Census.

The area planted to cotton in 1917 was about 4 per cent less than in 1916. A preliminary estimate of the Bureau of Crop Estimates made early in October indicated a crop of 12,000,000 bales, but this yield was materially reduced by reason of heavy early frosts and other unfavorable conditions over much of the cotton producing area. While the crop was below the average, its money value would probably exceed that of any previous crop as the average price of lint cotton to the producer on December 1, 1917, was 27.7 cents per pound as compared with 19.6 cents on the same date in 1916 and 11.5 cents in 1915.

According to the Bureau of the Census, there had been ginned prior to January 1, 1918, 10,450,401 running bales, exclusive of linters. This total includes 184,510 round bales, which are counted as half bales, and 86,813 bales of Sea Island cotton. Consular and other reports estimate the 1917 Egyptian crop at about 1,237,000 bales of 500 pounds each, and the crop of India at 3,418,000 bales. No definite estimates of the crops in other countries were available at the end of the war.

The cotton crop of the United States for 1916, estimated crop for 1917, and amount reported ginned by January 1, 1918, exclusive of linters, by States were:

States	*Crop, 1916*	*Estimated crop, 1917*	*Reported ginned, Jan. 1, 1918*
	500 pound bales	*500 pound bales*	*Running bales*
United States..	11,449.930	10,949,000	10,450,401
Alabama	533,402	505,000	483,016
Arkansas	1,134,033	895,000	858,445
California	43,620	67,000	37,265
Florida	41,449	40,000	46,353
Georgia	1,820,939	1,820,000	1,768,280
Louisiana	443,182	615,000	605,937
Mississippi	811,794	895,000	809,712
Missouri	62,699	51,000	44,739
North Carolina.	654.603	570,000	543,523
Oklahoma	823,526	890,000	884,829
South Carolina.	931,830	1,235,000	1,146,226
Tennessee	382,422	206,000	200,820
Texas	3,725,700	3.115,000	2,987,947
Virginia	27,127	16,000	16,273
All other States	13.604	29,000	17,536

Of the States listed as all others, Arizona, New Mexico, Kansas, and Kentucky contributed to the production, Arizona having reported as ginned 13,748 bales, most of which was Egyptian cotton. The figures given for California in the above table include small amounts of cotton from Mexico, especially from Lower California.

The final report of the Bureau of the Census on the cotton crop of the United States for 1916 was 11,449,930 bales of 500 pounds each, to which there should be added 1,330,714 bales of linters. The Sea Island cotton production for 1916 was 117,559 bales produced as follows: Florida, 36,092; Georgia, 77,981; and South Carolina, 3486 bales. The Sea Island bales ginned up to December 31, 1917, were 86,813 as follows: Florida, 86,100; Georgia, 44,748, and South Carolina, 5946. For the cotton year ending July 31, 1917, there was crushed 4,473,930 tons of cotton seed which yielded 1,403,979,199 pounds of crude oil and 2,222,688 tons of cottonseed cake and meal, besides other products. During the calendar year 1916 cotton fibre, linters, and hull fibre equivalent to 898,000 bales were consumed in the United States in the manufacture of explosives, and for the quarter ending March 31, 1917, 257,000 bales were so used.

The total exports of domestic cotton from this country for the year ending June 30, 1917, were 5,947,165 bales. The imports for the same period amounted to 294,123 bales of 500 pounds each. The principal importations were from Egypt, 177,545; Asia, 37,436; and Peru, 11,771 bales.

The world's production of commercial cotton, exclusive of linters, in 1916 was, according to the Bureau of the Census, 18,365,000 bales. Shepperson estimated the world's production in 1917, including the linters of the United States crop, at 21,514,000 bales. The contributions of the leading countries to the mill supply of the world for 1915 and 1916 were:

Country	*1916*	*1915*
	500 pound bales	*500 pound bales*
United States......	12,778,000	10,709,000
India	8,418,000	2,695,000
Egypt	990,000	963,000
China	2,500,000	1,800,000
Russia	1,065,000	1,435,000
Brazil	320,000	250,000
Mexico	70,000	125,000
Peru	130,000	93.000
Persia	50,000	130,000
Turkey	60,000	100,000
All other countries..	330,000	850,000

The world's consumption of cotton, exclusive of linters, for the year ending July 31, 1917, was, according to the Bureau of the Census, approximately 20,180,000 bales of 500 pounds net. The total number of consuming spindles was estimated at 150,000,000, of which about 33,400,000 were active in the United States during the year, 19,300,000 in northern States and 14,076,000 in the cotton producing States.

Data regarding cotton growing and handling in countries other than the United States were rather meagre at the end of 1917 owing to the disturbed conditions due to the war. In Great Britain a Cotton Control Board was appointed to regulate the transportation and utilization of cotton. A Committee on Cotton Research was established, with headquarters at Manchester, England, which would investigate problems connected with the production and manufacture of cotton. The exportation of Sea Island cotton from the British West Indies was prohibited, the government taking over the crop at prices ranging from 72 cents to $1.00 per pound. On December 7 an embargo was placed on the shipment of cotton from Egypt except on license.

The British Cotton Growing Association announced that the Government Grant having been withdrawn, it would be impossible for the Association to undertake any further developments. In 1916 there were grown 78,800 bales of cotton (400 pounds each) in countries where the industry had been fostered by the Association. The situation in Africa, aside from Egypt, was said to be very unsatisfactory due largely to lack of transportation. The production for 1917 was not expected to be much below that of 1916.

The Russian Ministry of Agriculture reported the cultivation of *Gossypium herbaceum* was diminishing and *G. hirsutum* increasing in Russian Central Asia. The cotton crop of China for 1915 was said to have been more than 1,000,000 bales and that of 1916 was much greater. Watering of cotton was still practiced to some extent in spite of regulations to the contrary. An allotment of $17,500 was made for cotton improvement work in Madras in 1916-17. A cotton experiment station was established in the state of Maranhao, Brazil. A plan for the commercial grading of Brazilian cottons was proposed. A shipment of over 78,000 pounds of long staple cotton to New York from Pernambuco was reported. The pink bollworm (*Gelechia gossypiella*) has appeared in the northern cotton district of Brazil.

The exports of cotton from Peru amounted in 1916 to over 24,000 metric tons, about 4000 of which was Aspero cotton used for imitation woolen cloth. Cauto cotton, a perennial species from Honduras, has been introduced into Jamaica, where the yield is said to be high. The fibre is reported to resemble Rough Peruvian. In Queensland 4 cents a pound for seed cotton is guaranteed for the crop of 1917 and 2 succeeding crops. In 1916, with an advance of 3.5 cents, a final price of a little more than 5 cents a pound for seed cotton was obtained.

In the United States a license was required for the exportation of cotton under the Export License Proclamation of August 27, 1917. An important reason for this restriction was the large increase of cotton shipments to six of the leading neutral countries of Europe. These countries received from the United States 387,922 bales of cotton in 1914, 1,845,571 in 1915, and 609,589 in 1916. The average mill consumption of these countries for the 5 year period to August 31, 1913, was 633,200 bales.

The cotton boll weevil advanced into South Carolina during the summer of 1917, and it spread over practically all the cotton growing region of Florida. It was said to have done much injury in Georgia, especially to Sea Island cotton. As a substitute for Sea Island cotton in regions where the boll weevil exists, experiments were in progress with an upland variety, Meade, which is said to be early, prolific, and its fibre little if any inferior to Georgia or Florida grown Sea Island cotton. One of the most serious menaces to cotton production in the United States is the presence in Texas of the pink bollworm. It was found near Hearne and Beaumont in the vicinity of mills which received seed from Mexico in 1916. At these places the infected areas were quite small. In the Trinity Bay region it had spread for 100 miles along the shore, involving about 1000 acres of cotton. Energetic measures have been taken to stamp it out, Congress having appropriated $250,000 for this purpose. For other diseases (see BOTANY, *Plant Diseases*). A reorganized cotton weather service was established by the United States Weather Bureau with headquarters at New Orleans.

COTTON BOLL WEEVIL. See COTTON.

COUNCIL OF NATIONAL DEFENSE. See CHEMISTRY, INDUSTRIAL.

COURLAND. A government of Russia, one of the Baltic Provinces. It was incorporated with Russia at the third partition of Poland, in 1795. It borders the Baltic Sea and the Gulf of Riga and on the south is bounded by the government of Kovno. Area, 10,535 square miles; population, as estimated January 1, 1915, 812,300. The people are largely Germanic. The largest city is Libau (Libava), a seaport, which before the great war had an estimated population of 90,700; the capital is Mitau (Mitava), 46,800.

COURTHOPE, WILLIAM JOHN. An English scholar and poet, died at Wadhurst, April 10, 1917. Born in 1842 at South Malling, Sussex, he studied at Harrow and at New College, Oxford, where he took honors in classics and humanities, wrote the Newdigate prize poem in 1864 and won the Chancellor's prize for an English essay in 1868. For many years he was a civil service commissioner, retiring in 1907. From 1895 to 1901 he served as professor of poetry at Oxford. Professor Courthope was especially attracted to the poetry of the seventeenth and eighteenth centuries, and wrote much in this field, beside modeling his own verse largely on that of Pope and his contemporaries. He edited Pope's works and wrote a *Life* of him, and for the *English Men of Letters Series* a *Life of Addison.* He is best known for his monumental *History of English Literature* (6 vols., 1895-1909), but he published also *Ludibria Lunæ, The Paradise of Birds, and Life in Poetry, Law in Taste.* He was elected a fellow of the British Academy of Letters and the Royal Society of Literature, and honorary fellow of New College, Oxford, and received honorary degrees from Durham and Edinburgh.

COURT TENNIS. See RACQUETS AND COURT TENNIS.

COWS. See DAIRYING.

CRAFTS, JAMES MASON. A distinguished American chemist and educator, died at Ridgefield, Conn., June 20, 1917. He was born in Boston in 1839. After graduating in 1858 from the Lawrence Scientific School of Harvard University, he studied in Europe, at the Mining Academy of Freiberg, at Heidelberg, and at Paris, one of his teachers being Bunsen. He returned to the United States in 1865 to enter mining work, and was sent to Mexico to examine mines. By 1868, however, he had entered on his long teaching career as professor of chemistry and dean of the chemistry faculty at Cornell University. In 1871 he accepted the chair of chemistry at the Massachusetts Institute of Technology. This he held nominally till 1880, although in 1874 he received leave to go abroad for research work. He made various important inventions and discoveries, in organic chemistry, physics, and physical chemistry, the most notable of which, made in collaboration with Charles Friedel, the French chemist with whom he did much work, was a synthetic method for the production of new carbon compounds through the catalytic action of chloride of aluminum (*Arsenic Ethers, a Method of Synthesis by Means of Chloride of Aluminum*, 1879). He returned to the Massachusetts Institute of Technology to be professor of organic chemistry from 1892 to 1897 and president from 1898 to 1900, when he again resumed research work, in Boston. Beside the monograph named, Professor Crafts published a textbook of *Qualitative Chemical Analysis* (1869), and *Researches upon Silicic Compounds* (1865), *Studies in Thermometry* (1880), *Catalysis in Concentrated Solutions* (1908), and *Thermometry* (1913-15). In 1885 he received the Jecker prize of the French Academy of Sciences and was made chevalier of the Legion of Honor. He was also a member of the National Academy of Sciences and other leading American societies, corresponding member of the British Association, and honorary member of the Royal Institution of Great Britain. Harvard gave him the degree of LL.D.

CRANDALLITE. See Mineralogy.

CRANE, Frank. An American illustrator and cartoonist, one of the first art editors of a daily newspaper in the United States, died October 26, 1917, at New Rochelle, N. Y. He was born in Rahway, N. J., in 1856, graduated at the New York Academy of Design, became a cartoonist on the New York *World*, and later art editor of the *World* before photographic processes began to be used in the makeup of daily newspapers. He afterward became art editor of the Philadelphia *Press*, and then was successively cartoonist on the New York *Tribune*, Sunday art editor of the New York *Herald*, and connected with the art departments of the New York *Times* and the Boston *Herald*. He wrote stories for boys and the comic series "Willie Westinghouse Smith," "Uncle Dick's Contraptions," and "Muggsy." He was a cousin of Stephen Crane, the author.

CRAWFORD, John Wallace (Captain Jack Crawford). An American scout, lecturer, and writer of prose and verse, died in Jamaica, N. Y., February 28, 1917. He was born in 1847 in County Donegal, Ireland, but as a boy came with his parents to the United States. Although under age, he managed to enlist in a Pennsylvania regiment and fought in the Civil War by the side of his father, who was killed in battle. The son was severely wounded. After the war he went west and as a government scout served in several famous Indian campaigns, notably as chief of scouts (succeeding "Buffalo Bill") under General Crook when Sitting Bull was captured, and under Custer. From 1886, when he retired from army life, Crawford was for long a ranchman and miner in New Mexico. Two years he spent in the Klondike. Latterly he had been known chiefly as a lecturer and as an author of verse, stories, and songs, collected as *The Poet Scout; Lariattes;* and *Whar the Hand o' God is Seen*. He also devoted himself to the cause of temperance, and claimed to have persuaded 25,000 boys and men, many of them convicts, to sign the pledge.

CREDIT UNIONS. See Agricultural Credit; Remedial Loans.

CRESTMOREITE. See Mineralogy.

CRETE (Candia). An island in the Mediterranean Sea; an autonomous state under the suzerainty of Turkey until May 31, 1913, when it was ceded to the Balkan powers, which formally recognized its union with Greece by the treaty of Bucharest, August 10, 1913. Area, 3327 square miles; population (census of April 17, 1911), 344,001. Canea, the capital, has 25,185 inhabitants. Greek is the language of the people a large majority of whom are Christians. The chief products for export are wheat and fruit, wool, soap, olive oil, carobs, vallonea, and cheese.

CRICKET. The principal cricket matches of the year 1917 were those played for the Halifax Cup. The New York team was the victor with 6 games won, and 2 lost, total points 5. The standing of the other competitors was: Frankford, Pa., won 5, lost 1, total points 4; Germantown, Pa., won 2, lost 4, total points 2; Merion, Pa., won 0, lost 6, total points 0.

The Manhattan and Columbia Oval clubs tied for the Metropolitan District League championship, each winning 9 games and losing 1. Brooklyn finished second with 6 victories and 1 defeat.

The Manor Field Club captured the laurels in the New York and New Jersey Association, winning 7 matches, losing 2, and drawing 2. Bensonhurst was second with 6 victories, 2 defeats, and 4 draws.

CRIMINOLOGY. See Penology.

CRIMMINS, John Daniel. An American contractor and capitalist, died in New York City November 9, 1917. He was born in New York City May 18, 1844, and was educated at St. Francis Xavier College. In 1864 he became a partner in his father's contracting business and in 1873 head of the firm. He built many important public works, and was an enthusiastic promoter of all enterprises calculated in his judgment to improve and beautify his native city. He was one of the first to use the steam drill in excavating, and after proving his ability in many kinds of planning and building, he became the head of one of the greatest contracting concerns in the United States. In addition to laying out parks and streets, he built some of the greatest churches, hospitals, and many other public edifices, while equally prominent as a constructor of street railways. He built the larger part of the city's elevated railroads and its first underground trolley system. So wide and varied were his activities as a contractor that he was said to have built "a considerable portion of New York and her public utilities." At one time he employed as many as 20,000 men. His great business successes and popularity made him in the estimation of the Democratic party, to which he belonged, an acceptable candidate for political honors; but he usually declined the latter, the only city office he ever filled being that of Park Commissioner (1883-88). He was three times a Democratic Presidential elector and in 1894 a delegate to the New York State Constitutional Convention. On several occasions he acted successfully as arbitrator in settling strikes. His eminence as a contractor and capitalist led him into large insurance, real estate, and financial operations. He became president of, or a director in, several industrial and financial corporations, and a trustee or member of many benevolent societies. One of the most prominent Catholic laymen in the country, he contributed munificently to the charitable institutions of his Church, and in 1901 was honored by Pope Leo XIII, who conferred upon him the title of Knight Commander of the Order of St. Gregory the Great. Mr. Crimmins made a large collection of books and publications of Irish history and literature, and of publications relating to New York, of whose history and development he had an intimate knowledge that often made him the trusted advisor of city officials.

CRITICISM. Literary. See articles on French, German, Italian, Russian, Scandinavian, and Spanish Literatures; also Literature, English and American.

CROATIA AND SLAVONIA. A crownland of Hungary (but not a part of "Hungary proper") extending from the Danube and Drave rivers westward to the Adriatic Sea. Croatia and also Slavonia are each a titular kingdom. The eastern part of the crownland is Slavonia, which lies between Hungary proper and Bosnia. Area of the crownland, 16,425 square miles. The population at the census of December 31, 1910, was 2,621,954, as compared with 2,416,304 in 1900; as estimated in 1913, 2,668,569. The capital is Agram (Zágráb), with 79,038 inhabitants in 1910; Osjek (Eszék)had 31,388 inhabitants. The crownland has autonomy in respect of public instruction, justice, and internal affairs. The Diet consists of 90 members, elected for five years. Croatia and Slavonia are represented by 40 members in the lower house of the Hungarian Parliament.

CROCKER LAND. See Polar Research.

CROMER, Evelyn Baring, first Earl. A British statesman, died in London, January 29, 1917. The son of Henry Baring, a member of Parliament, he was born at Cromer Hall, Norfolk, February 26, 1841. He was destined to the army from the beginning, receiving his training at Woolwich and entering the Royal Artillery at the age of 17. Three years later he went to the Ionian Islands as aide to Sir Henry Storks, whose secretary he was made in 1865. Meanwhile he had sojourned in the United States for a time, to study the Civil War. He received permission to go to the front and reached the Union lines before Petersburg. At the end of a period (1872-76) as private secretary to his cousin, the Earl of Northbrook, then governor general of India, Baring was promoted from captain to major and within a year was appointed a commissioner of the Egyptian Public Debt. It was by his influence on the board which was examining into the financial methods of the Khedive Ismail that he first gained attention, and he held it thereafter. When Ismail had to abdicate, Baring became controller general. After three years as financial member of the council of the governor general of India, he returned, as Sir Evelyn, to Egypt to assume the post of agent and consul general. It was for his constructive work in this country that he became famous. Largely to Lord Cromer Egypt owes what she is to-day, and of course the debt is equally Great Britain's.

When he arrived, in 1883, he found the country falling apart, the Khedive Tewfik having failed to follow in Ismail's despotic footsteps and the British Government having made a futile effort to establish something like constitutional government. He proceeded to show himself a genius in organization. The internal affairs of the country were placed on a sound basis, beginning with the public works department, which began to exercise effective control of irrigation. The new agent did not stop till every Government department and the army were in a condition to render efficient service. Before he resigned, because of ill health, Egyptian credit was on a par with that of any other country; he found it almost non-existent. But Lord Cromer was a statesman and not merely an administrator. On his advice the British ministry was persuaded that temporarily the Egyptian government should abandon its claim to the Sudan. Later, when it came to a crisis, he did all in his power to support Kitchener in that general's great march to Khartum. Cromer's relation to General "Chinese" Gordon and the expedition that terminated so fatally, was later explained. Although the British Government insisted on using Gordon for the relief mission, against Cromer's advice, the consul general aided him in every way and endorsed his request for the despatch of Zobeir to Khartum. The refusal of the British Foreign Office to comply made possible the tragedy that Kitchener avenged.

Lord Cromer had been baron since 1892, viscount since 1898, and earl since 1901. He received the highest honors that could be bestowed in recognition of his services, the Order of Merit, membership in the Privy Council, the G. C. B. and G. C. M. G., the honorary doctorate of laws from Oxford and Cambridge, and the Albert medal of the Society of Arts. In his later years he had been a minister plenipotentiary in the diplomatic service. His grasp of international affairs had been proved by his part in the negotiations leading up to the Anglo-French Declaration of April 8, 1904, by which Great Britain received recognition of her control in Egypt and the Egyptian government gained financial freedom. Also in 1906, when Turkish encroachments on the Sinai peninsula threatened the Suez Canal, Cromer had promptly taken measures which blocked any designs the Ottoman government may have had. Shortly before his death he was chairman of a commission appointed to investigate the Dardanelles campaign.

A list of the books published by Lord Cromer indicates how wide was the range of his interests: *Staff College Essays; Paraphrases and Translations from the Greek; The War Game* and other military works; *Modern Egypt* (2 vols.), which tells the story of his work of reconstruction; *Ancient and Modern Imperialism; Political and Literary Essays* (3 series, the third published in 1916); and *Abbas II.*

CROPS. See article Agriculture and section *Agriculture* under various countries and States of the United States.

CROSS COUNTRY RUNNING AND MARATHONS. James Henigan of the Dorchester Club, Massachusetts, was the star performer in cross country running during 1917. Henigan attained the supremacy by winning the senior race of the Amateur Athletic Union at Franklin Park, Boston, Mass. His time was 33 minutes, 58 seconds. W. Kyronen, of the Millrose A. A., New York, put up a hard fight for the honors, finishing only ⅖ of a second behind the winner. The team trophy went to the Dorchester Club with the Millrose A. A. second and the Paulist A. C., New York, third.

G. T. Nightingale, of New Hampshire State College, sprang a big surprise by capturing the junior cross country championship in a race held over the Van Cortlandt Park course, New York City. His time was 33 minutes, 26 seconds. J. Tuomikoski, of the Dorchester Club, finished second in 33 minutes, 33 seconds. The team prize was won by the Paulist A. C., the St. Christopher Club, New York, being second and the Brooklyn A. A. third. One hundred and three runners, among them many soldiers from the training camps, completed the course.

The University of Pennsylvania won the intercollegiate title race over the Van Cortlandt Park trail. Cornell was second and Columbia third. The individual winner was I. C. Dresser, of Cornell. L. L. Glover, Pennsylvania, finished second. The winner's time was 33 minutes. The college freshmen event went to Syracuse with Harvard second and Yale third. The individual winner was D. O'Connell, of Harvard, in 16 minutes, 12 seconds.

William J. Kennedy, of the Morningside A. C., won the American Marathon, 25 miles, contested under the auspices of the Boston A. A., his time being 2 hours, 28 minutes, 37⅕ seconds. The winners in other marathons of the year were: Mercury A. C. Run, Yonkers, Joseph Giorgio, Paulist A. C.; Brockton Run, Clarence H. De Mar, Dorchester Club; N. Y. *Evening Mail* Marathon, Hannes Kolehmainen.

CRUISERS. See BATTLESHIPS; NAVAL PROGRESS.

CUBA. A West Indian republic, consisting of the island of Cuba, the Isle of Pines, and adjacent islets. Capital, Havana.

AREA AND POPULATION. The republic is divided into six provinces, having a total estimated area of 44,164 square miles (114,385 square kilometres). The table below shows the area by provinces, the population according to the census of September 30, 1907, and the population according to an enumeration of November, 1916:

	Square miles	*Population*	
		1907	*1916*
Pinar del Río	5,207	240,372	269,166
Habana	3,171	538,010	688,057
Matanzas	3,257	239,812	280,353
Santa Clara	8,250	457,431	595,229
Camagüey *	10,066	118,260	193,201
Oriente †	14,213	455,086	604,530
Total	44,164	2,048,980	2,627,536

* Formerly Puerto Príncipe.
† Formerly Santiago de Cuba.

In 1907 native whites numbered 1,224,539; foreign whites, 203,637; colored, 620,804 (of whom 274,272 negroes, 334,695 mulattoes, 11,837 Chinese). In 1914 births numbered 85,317, deaths 35,887; in 1915, 80,582 and 35,086. In 1914, immigrants numbered 25,911 (including 20,140 Spaniards); in 1915, 32,795 (including 24,501 Spaniards); in 1916, 55,121. Of the immigrants in 1916, Spaniards numbered 37,615; Jamaicans, 7133; Haitians, 4992; Porto Ricans, 1277; Americans, 1209. Estimated urban populations (the figures are for cities proper, not municipalities, which in some cases include large rural areas): Havana, 359,000; Santiago de Cuba, about 50,000; Matanzas, about 40,000; Cienfuegos, about 35,000; Camagüey, about 34,000; Cárdenas, about 26,000; Sancti Spiritus, about 20,000; Santa Clara, about 20,000.

EDUCATION. Elementary instruction is by law free and compulsory. The 1907 census returned 31 per cent of the population as unable to read. Teachers in elementary schools in 1915, 4931; pupils enrolled, 289,692; average attendance, 183,947. A government secondary school is maintained in each of the six provinces; total students, over 2000. The University of Havana has upwards of 1400 students.

PRODUCTION. Cuba owes its prosperity to its large crops of sugar cane and fine tobacco. Other important products are cereals, potatoes and other vegetables, cacao and fruits, especially pineapples, bananas, oranges, and coconuts. Tobacco cultivation is most important in the western province of Pinar del Río. It makes possible the large industry of cigar and cigarette manufacture. The reported number of cigars produced in Cuba in 1916 was 390,126,959, of which 222,772,259 were made in Havana. Cuban consumption of cigars in 1916 was stated at 268,463,650.

Cuba leads the world in the production of cane sugar. A record output was made in 1873, with about 775,000 metric tons of raw sugar. This yield was not attained again until 1891, when the output was 819,760 tons. In 1894 the yield was 1,054,214 tons and in 1895 1,004,264 tons. The war for independence reduced production to 225,221 tons in 1896. There was no remarkable increase until 1901, when 635,856 tons were produced. Since 1901 there has been a rapid and continuous increase except in 1908, 1911, and 1915. The output in 1912 surpassed all previous yields, amounting to 1,895,984 tons; in 1913 the production was 2,428,537 tons; in 1914, 2,597,732 tons; in 1915, 2,592,667 tons; in 1916, 3,007,915 tons; in 1917, about 3,020,000 tons. The political disturbances in Cuba in 1917 caused many foreigners to leave the country and as a result the labor supply was insufficient to harvest the 1918 sugar crop. There was also a shortage of bags. In December, 1917, it was reported that 1,384,812 acres of cane were under cultivation. The yield in good years is about 2½ tons per acre. It was expected that the 1918 crop would exceed the record crop of 1917.

Cattle raising is an important industry. Live stock as reported for December 31, 1915: cattle, 3,703,928; horses, 720,040; mules, 54,264; asses, 2882.

Cuba has large mineral resources, especially in the province of Oriente. The minerals include iron, of which there are immense deposits, manganese, copper, lead, zinc, gold, potash, asphalt, salt, and petroleum. The principal minerals worked are iron and copper. In 1917 petroleum production in the vicinity of Havana was of great promise.

COMMERCE. In the fiscal year ending June 30, 1916, imports and exports were valued at $201,023,670 and $336,801,378, as compared with $128,132,090 and $219,447,322 in the fiscal year 1915. The course of the foreign trade is shown below, in thousands of dollars for fiscal years:

	1907	*1912*	*1913*	*1914*	*1915*	*1916*
Imports:	97,334	120,229	135,811	134,008	128,132	201,024
Exports:	114,813	146,788	165,208	170,797	219,447	336,801

Leading imports in the fiscal years 1915 and 1916 respectively, in thousands of dollars:

breadstuffs, 17,954 and 22,000; machinery, 8538 and 19,544 (exclusive of agricultural implements free of duty, 347 in 1916); meats, 11,111 and 13,976; cotton and its manufactures, 9716 and 12,819; vegetables, 6060 and 8774; iron and steel and their manufactures, 5346 and 8489; leather manufactures, 5532 and 7073; apparatus, carriages, cars, etc., 3296 and 6779; vegetable fibres (other than cotton) and their manufactures, 6264 and 6377; beverages and edible oils, 4246 and 5096; wood and its manufactures, 3025 and 5037 (exclusive of unplaned pine lumber free of duty, 2861 in 1916); coal, 4296 in 1916; dairy products, 3241 and 3711; oils, soap, etc., 2507 and 3265; fish, 2510 and 3120; paper, 1601 and 2573; mineral oils, etc., 1448 and 2381; wool and hair and their manufactures, 822 and 1399. Export values in fiscal years, in thousands of dollars:

	1913	*1914*	*1915*	*1916*
Sugar	111,798	119,748	175,611	252,697
Molasses	1,978	2,435	2,727	3,170
Confectionery	69	83	58	78
Fruits, etc.	2,475	2,824	2,789	2,699
Grains	705	740	724	848
Live animals	11	15	9	11
Hides and skins	2,431	2,568	2,414	3,388
Other animal products	111	150	103	111
Tortoise shell	44	47	3	11
Sponges	296	300	182	199
Asphalt	61	24	11	15
Iron, copper, and gold ores	4,838	4,268	3,798	6,979
Old metals	49	155	82	304
Vegetable fibres	214	51	88	135
Woods	2,814	1,661	879	846
Unmanufactured tobacco	21,650	19.007	14,637	16,264
Manufactured tobacco	13,914	13,773	8,312	9,495
Bee products	838	874	456	704
Distilled products	494	532	624	2,916
Other articles	436	260	718	801
Reëxportations	487	624	769	832
Money	1	667	4,534	84,847
Total	165,208	170,797	219,447	386,801

The sugar export in the fiscal year 1916, valued at $252,696,678, amounted to 6,746,622,964 pounds; of this, the United States took 5,146,896,503 pounds, valued at $194,421,530, and the United Kingdom 1,300,353,084 pounds, valued at $47,578,810. The export of leaf tobacco in 1916 was 33,783,877 pounds, valued at $12,654,876; the United States took 19,639,545 pounds, valued at $9,189,364, and the Netherlands 6,439,014 pounds, valued at $1,473,598. Cigars were exported to the number of 123,756,345, valued at $8,787,412; the United States took 42,019,668, valued at $3,392,764, and the United Kingdom 47,136,825, valued at $2,923,078. The entire copper and iron ore export went to the United States in 1916; copper ore amounted to 82,290 tons, valued at $4,229,652, and iron ore 842,598 tons, valued at $2,389,124.

Imports by countries in fiscal years, in thousands of dollars:

	1913	*1914*	*1915*	*1916*
United States	71,754	71.420	78,971	149,591
United Kingdom	17,412	15,619	15,004	16,715
Spain	10,602	10,884	10,459	12,399
France	8,237	8,257	4,240	5,358
British India	2,360	2,897	3,023	3,410
Uruguay	2,224	1,714	1,589	2,662
Porto Rico	3,404	2,988	2,428	2,427
Germany	9,515	8,276	2,219	64
Total, incl. others	135,811	134,008	128,132	201,024

Exports by countries in fiscal years, in thousands of dollars:

	1913	*1914*	*1915*	*1916*
United States	132,581	136,936	185,995	247,197
United Kingdom	15,668	18,245	24,218	52,379
Spain	878	1,826	3,157	20,389
France	1,826	2,652	854	8,866
Italy	86	91	50	2,381
Netherlands	594	375	806	1,830
Argentina	1,519	972	588	1,059
Germany	6,498	4,436	645	....
Total, incl. others	165,208	170,797	219,447	336,801

COMMUNICATIONS. Railway communication is established almost from one end of the island to the other. There are four important systems: the United Railways of Havana (705 miles), the Cuba Railroad (589), the Cuban Central Railway (349), and the Western Railway of Havana (147). Through trains run daily between Havana and Santiago de Cuba, but over tracks belonging to three different systems, and many branch lines from this main trunk connect the principal ports on both the north and south coasts with the interior. The total length of railway in operation is stated at 2390 miles, including over 500 miles of private track serving the large sugar estates. Number of telegraph offices as reported for 1915, 226; government radiotelegraph stations, 9; post offices, 658.

FINANCE. The standard of value is gold. A new coinage was introduced December 1, 1915, the monetary unit being the gold peso, equivalent to the American dollar. American coinage continues to be a legal tender. The budget for the fiscal year ending June 30, 1917, showed estimated revenue of $41,828,580 and estimated expenditure of $40,262,906; for the fiscal year 1918, $46,679,942 and $36,337,686. The actual revenue for 1917 was reported at $44,498,708. The customs receipts for the fiscal year 1916 were reported at $31,353,691, as compared with $24,327,114 in the preceding fiscal year. Public debt (1917), $68,908,000.

GOVERNMENT. The legislative power is exercised by a congress of two chambers, the Senate and the House of Representatives. Senators (24 in number, 4 from each province) are elected by indirect vote for eight years; representatives (114) are elected by direct vote for four years. Male citizens over twenty-one years of age have the suffrage. The executive authority is vested in a president, who, with a vice-president, is elected by indirect vote for four years and is ineligible for more than two consecutive terms. The president is assisted by a cabinet representing eight government departments. On May 20, 1913, Gen. José Miguel Gómez was succeeded as president by Gen. Mario García Menocal, the successful candidate of the Conservative party. Gen. Menocal was again a candidate at the election of November 1, 1916, his opponent being Alfredo Zayas, candidate of the Liberal party, supported by ex-President Gómez. Menocal's reëlection was declared November 5 but it was contested, and was finally proclaimed by the Cuban Congress May 7, 1917. His term of office expires May 20, 1921. Vice-president, Emilio Núñez.

HISTORY

UPRISING AGAINST THE GOVERNMENT. Difficulties over the elections of November, 1916, led to a revolt under ex-President Gómez, on

February 9, 1917. In the elections the president, M. G. Menocal, the Conservative candidate, was again chosen. On the other side, Señor Alfredo Zayas, vice-president under Gómez, was the candidate of the united Liberal party, having the support of those who voted for him in the 1912 election and also of the adherents of Gómez. The elections were very close and both sides claimed the victory. A number of votes were contested in the provinces of Oriente and Santa Clara. These contests were carried to the supreme court and the decision was in favor of the Liberals, but some of the ballots had been destroyed and for these cases a second election was ordered. The Liberals, under the leadership of ex-President Gómez, revolted without waiting for the elections. The seat of the revolt was in the eastern provinces. Santiago de Cuba was seized by the rebels and sugar crops in the province of Oriente were destroyed by them. The Conservatives declared that the revolt was intended to stop the elections. In this it was not successful. One of the elections was held, namely, that in Santa Clara. The rebels afterward took possession of the city of Oriente. Thereupon the president, by proclamation, postponed the Oriente elections. Secretary Lansing of the United States appealed to the people of Cuba in an address on February 12 not to plunge the country into civil war, and he addressed a second warning to them on February 14 saying that the United States would not recognize any government that was set up by violence. Meanwhile, the American government had granted a request from the Cuban government for the sale of rifles and ammunition. On February 17 loyal troops captured the city of Santi Spiritus where General Gómez had formerly lived, and soon afterwards two other cities of the province of Oriente fell into their hands. On March 7 General Gómez and his whole staff, together with three hundred men, were taken prisoners by government troops after a battle in which more than 3000 soldiers participated and in which the rebels were said to have lost 100 killed and 300 prisoners. On March 6 Commander Belknap, who was at the head of American naval affairs at Santiago, issued a warning against taking part in military operations in the province of Oriente, except under orders from the provincial commandant. On March 8 the insurgents, having left the city, he landed four hundred bluejackets from the American vessels to protect American interests if necessary. On March 24 the American government repeated its promise to support the Cuban government in the reëstablishment of order and its condemnation of the conduct of the rebels. The reëlections in Oriente took place on April 9, those in Santa Clara having been already held in February. When the final returns were announced it appeared that out of 122 electoral votes, President Menocal received 86; Señor Zayas, 36; the Conservatives carrying four out of the six provinces. General Menocal took the oath of office on May 20.

Meanwhile the revolt had subsided. It was learned on April 1 that Major R. Fernandez, the leader of the rebels in the province of Oriente, with some others, had fallen into the hands of the American naval forces, and that the Cuban government would immediately ask for their extradition. Colonel R. Manduley, former governor of the province and head of the Liberal party, then surrendered with five hundred followers at Guantanamo; the surrender of other forces soon followed and, after the beginning of April, the revolution was virtually at an end. The president's message to congress after condemning the violations of the law, expressed gratitude for the course taken by the United States.

Rupture with Germany. A war resolution was passed unanimously by both houses of congress and was signed by the president on April 7. This declared that a state of war existed with Germany from that moment and that the president was authorized to use all the land and naval forces in the manner that he thought necessary and was to give to congress a report as to the measures that he had taken. The authorities thereupon seized four German and one Austrian vessel in Cuban waters. Toward the end of the month a mission was appointed to visit the United States and confer with the American government in regard to Cuba's part in the war.

Reported Plots. On February 20 the government declared that it had discovered a plot to kidnap or murder the president on his way to his country house in the suburbs, and a number of arrests were at once made. On May 10 a plot to assassinate the president was reported at Havana. A government agent who was working with the conspirators revealed the plot and delivered to the government the bomb which was intended to be used against the president.

Financial Measures. The president authorized the issue of $13,000,000 in government bonds for a war loan beginning July 1, and to bear interest at not more than 6 per cent. On May 26 several revenue measures were announced in the press including a normal tax of 10 per cent on each bag of sugar weighing 325 lbs. or more and an extraordinary war tax of 10c when the price reached 3c. a lb. There was also to be a tax of 6 per cent on the net profits of sugar companies operating in Cuba; and taxes were imposed on the net profits of mining and insurance companies.

See War of the Nations. *The Diplomacy of the War.*

CUMBERLAND PRESBYTERIAN CHURCH. According to the latest available statistics, this denomination, including the Cumberland Presbyterian Church (colored) had about 1150 ministers, 1700 churches, and 85,000 communicants. The denomination publishes a weekly journal, the *Cumberland Presbyterian*, as well as several Sunday School periodicals and some literature. The missionary work is not as satisfactory as it might be because so many of the presbyteries and synods have organized their own board of missions, thus causing a considerable loss to the income of the board of missions for the whole church. In 1917 satisfactory progress was made in all lines of endeavor with the exception of revival work. This branch had not brought as many converts into the fold as was hoped and strong efforts were to be made to overcome this seeming stagnation.

CURAÇAO. A Dutch colony in the West Indies, with an area of 436 square miles and a population, December 31, 1915, of 56,754. Composed of the islands of Curaçao (212 square miles), Bonaire (Buen Ayre), Aruba, St. Eustatius, and Saba, and part of the island of St. Martin. Total imports (1915), 4,665,431 guilders; exports 2,338,413. Vessels entered 1915, 2930, of 837,848 tons. The budget for 1917 showed estimated revenue of 758,694 guilders; expenditure, 1,316,815.

CURRENCY. See Banks and Banking; Coins, Value of Foreign; and Financial Review.

CURRIER, Enoch Henry. Principal of the New York Institution for the Instruction of the Deaf and Dumb, died August 19, 1917, at the age of sixty-eight. He was widely known in this country and abroad for his work among the deaf, dumb, and blind to which he devoted practically his entire life. He wrote a number of books which are accepted as authoritative on the subjects. Among them are: *Speech-Teaching to the Deaf; Aural Development; New Aids to Hearing; The Manual Alphabet in the Public Schools.*

CUTTER, Ephraim. An American physician and food specialist, died at West Falmouth, Mass., April 25, 1917. He was born at Woburn, Mass., in 1832, graduated at twenty from Yale, and four years later took his degree at Harvard Medical School after studies under Oliver Wendell Holmes and J. P. Cooke. In 1857 he received the degree of M.D., also from Yale. Dr. Cutter practiced first at Woburn, later at Cambridge and Boston, and from 1881 in New York. For a time he was professor of morphology and applied medicine in the College of Physicians and Surgeons, Boston. He invented various surgical and especially gynecological instruments, early experimented in microphotography of the blood and sputum, discovered a tuberculosis cattle test in 1894, and made other contributions. Besides some 800 papers in medical journals, he published several books on food in relation to health and disease, two of them in collaboration with his son, Dr. John A. Cutter. He was a member of the Ninth and Tenth Medical Congresses.

CYCLING. Arthur Spencer of Toronto, Canada, wrested the bicycle sprint championship from Frank L. Kramer, who had held the title for fifteen years. This was the outstanding feature of the year 1917 in cycling. Spencer captured four firsts during the season and finished fourth once for a total of 21 points. Alfred Goullet also succeeded in beating out Kramer, amassing a total of 18 points, as against the veteran's 9. The professional paced championship was won by George Wiley with 92 points. Victor Linart was second with 61 points and Percy Lawrence third with 58.

The amateur title went to John K. Staehle with Fred Taylor second and C. Dotterweich third. The six-day race held at Madison Square Garden, New York, was won by the Goullet-Magin team. The largest crowds on record attended this annual contest. Because of the war the Union Cycliste Internationale suspended operations, and no world championship races were held.

CYPRUS. The island of Cyprus is situated in the easternmost basin of the Mediterranean Sea, with Asia Minor to the north and Syria to the east, at distances of 60 and 41 miles respectively. It lies between 34° 33′ and 35° 41′ N. latitude, and between 32° 20′ and 34° 35′ E. longitude. The port of Larnaca on the southern coast is 258 miles from Port Saïd and 1117 miles from Valletta in Malta.

Its area is 3584 square miles (after Sicily and Sardinia), the third largest Mediterranean island. Its largest length from west-southwest to east-northeast, between Cape Drepano and Cape St. Andrea, is about 140 miles, and its greatest breadth from north to south is about 60 miles.

From 1489 till 1571 Cyprus belonged to the republic of Venice. Then the Turks gained and maintained possession of it until its cession for administrative purposes to England in 1878; and in 1914, at the outbreak of war with Turkey, the British Crown formally annexed it. About 25.9 per cent of the population (which totaled 274,108 in 1911 and was estimated, December 31, 1915, at 294,664) are Ottoman Turks.

The government railway from Famagusta to Nicosia (36 miles) came into use in August, 1905; was in 1907 extended to Morphou (25), and to Evrychou (15) in 1915.

	1912	*1913*	*1914*	*1915*
Imports, mdse...	£602,845	£619,837	£496,744	£588,019
Imports, B. & S.	104,692	56,747	73,306	24,598
Exports, mdse..	728,988	620,591	496,776	650,490
Exports, B. & S.	60,427	79,322	53,463	10,907
Revenue	334,685	341,816	290,110	363,692
Expenditure ...	258,661	296,165	316,414	294,318
Shipping	644,363	721,515	581,926	308,311

In the above table, imports and exports of merchandise and bullion and specie, with shipping in total tons entered and cleared, are given for calendar years; revenue and expenditure for fiscal years ending March 31, 1912, 1913, 1914, and 1915. Maj. Sir John E. Clauson was appointed British high commissioner in December, 1914.

DAHOMEY. A French West African colony; one of the component parts of the government-general of French West Africa (q.v.). With a coast line of only seventy miles (about), the colony includes an extensive hinterland. A recent estimate of population is 910,902 of whom 809,402 fetishist, 75,000 Mohammedan, 20,064 Roman Catholic, and 6500 Protestant. Capital, Porto Novo, with 40,000 inhabitants; other towns are: Abomey (12,372), Ouidah or Whydah (13,000), Grand Popo (2115), and Cotonou (2456). The principal products for export are palm kernels, palm oil, dried fish, live animals, corn, copra, cotton, kola nuts, etc. A railway (722 kilometres), which when completed will connect Cotonou with the Niger at a point near Karimana, is finished as far as Savé (261 kilometres). The line has three main sections: Cotonou to Paouignan, 194 kilometres; Paouignan to Parakou, 246; Parakou to the Niger, 250. A branch from Cotonou (32 kilometres) runs to Ouidah and Segboroué.

DAIRYING. The Situation in the United States. The number of milch cows in the United States in 1917 was 23,906,000 as against 22,768,000 in 1916 and 20,497,000 in 1913. The annual milk yield per cow in 1917 was estimated at 3715 lbs., or a total production during the year of 84,611,350,000 lbs. During the fiscal year ended June 30, 1916, exports of dairy products amounted to about $24,000,000, with imports at about $11,000,000. For the year ended June 30, 1917, the exports were about $49,000,000, and the imports $9,000,000. The exports of condensed milk alone increased from

16,000,000 lbs. in 1914 to 259,000,000 lbs. in 1917.

Because of the large place held by dairy products in food economy, efforts were made by the U. S. Department of Agriculture and the State experiment stations to insure an adequate food supply by the elimination of waste, the more complete utilization of by-products, and by advising producers as to ways and means of meeting the high cost of feed without sacrificing their dairy cows. The U. S. Dairy Division recommended that skim milk, which is often fed to pigs or thrown away, be made into cottage cheese, a wholesome and nutritious food which may be used to replace meat to some extent in the diet. Directions for making the cheese and recipes for its use were prepared and widely circulated. An enormous increase in the output and consumption of this cheese resulted. The work of cow-testing associations enables the dairy farmer to feed his cows to better advantage and to eliminate unprofitable cows from his herd. There are now 472 active cow-testing associations and 36 bull associations in the United States.

The dairy industry was making rapid strides in the South, especially in the regions of the cotton belt invaded by the boll weevil. Millions of acres formerly in cotton in 1917 produced corn and velvet beans, and as a result farmers in those regions were feeding their dairy cows this winter on home-grown feeds entirely. The creamery association of Mississippi established a system of grading cream, with payment arranged on a quality basis. In the mountainous sections of the South, where summer nights are cool and cold water is abundant, small cheese factories were proving very successful. In 1917 there were thirty-four cheese factories in this region, and the output for the year was estimated at $100,000.

The milk supply of the larger cities in the United States continued in a very unsettled condition. The high prices of feeds, the scarcity and advanced cost of labor, and the increased demand for milk for condensing and other purposes were factors in the agitation for high prices. The December price to producers at points not more than 100 miles from New York was $3.15 per 100 lbs. for grade B milk, testing 3 per cent fat. At Chicago the price set for milk for November and December was $3.22 per hundredweight. These price agreements were for one month only. For the purpose of solving the whole problem of metropolitan areas, the U. S. Food Administration adopted the plan of appointing regional milk tribunals. The producers, distributors, consumers, milk experts, and the public at large were to be represented on these commissions. The personnel of the commissions for the Chicago, New York, and Baltimore dairy districts was announced by the end of the year, and hearings were being held to secure information on which to base milk prices, and to investigate possibilities of reducing costs of distribution. In many cities community centres and other cooperative organizations were arranging for the delivery of milk direct from producer to consumer.

The average wholesale price of milk in the United States remained practically stationary at about 20 cents per gallon until the middle of 1916, since which it has steadily increased, the increase being quite rapid from August, 1917. The average wholesale price of milk in November was 29.1 cts., and the retail price 38.9 cts. per gallon.

By an agreement between the representatives of the butter and egg exchanges of the nation and the U. S. Food Administration, all speculation in butter and eggs was eliminated for the period of the war. The Elgin butter board voluntarily closed its activities during the war.

DAIRY INVESTIGATIONS. The large amount of emergency investigations and of propaganda work being done, has not materially interfered with the more fundamental dairy research in the United States. The Missouri Experiment Station determined that important variations occur in the composition and properties of milk, due to the underfeeding of the cow, and that these variations have an important bearing on the use of such milk for infants. This station also demonstrated that the deleterious effect on the market quality of butter due to feeding large quantities of cottonseed meal might be overcome by feeding silage with the cottonseed meal. Investigations at the Illinois Station showed that the large numbers of bacteria commonly found in milk did not have their origin in the barn. In these studies it was found that in the production of milk of low germ content the udders of some cows may become the principal source of contamination. The U. S. Dairy Division found that the four major factors in the production of clean milk were (1) thorough sterilization of milk utensils; (2) cleanliness of cows, especially of udders and teats; (3) the use of the small-top milk pail; (4) prompt and proper refrigeration.

DAIRYING IN CANADA AND EUROPE. Owing to war conditions very little accurate information was obtainable as to dairy conditions in Europe. The dairy investigations reported pertained for the most part to emergency work. It was estimated that 28,000,000 dairy cows had been slaughtered in Europe since the beginning of the war. The value of the milch cows in Canada in 1916 was estimated at $181,813,000. For the nine months ended March 31, 1917, imports of butter into the United Kingdom were 86,566 tons and of cheese 111,049 tons, as compared with 123,645 tons of butter and 99,384 tons of cheese for the corresponding nine months of the previous year. In London, an amalgamation was made of the dairies for the purpose of eliminating duplication of work in the handling and delivery of milk, and in addition an effort will be made to improve the quality of the milk.

DAIRY RECORDS. The Jersey cow, Sophie 19th, completed another year's test at the age of nearly thirteen years, with a production of 15,948.2 lbs. of milk, containing 847.8 lbs. of fat. Four times in her career Sophie 19th exceeded 1000 lbs. of butter in a year. In her lifetime she has produced 91,869 lbs. of milk. 14.64 per cent of which was solids; so that she has produced over 13,458 lbs. of edible solids. At two years old the carcass of a beef steer furnishes about 200 lbs. of edible solids.

The Holstein cow, Aggie Acme of Riverside 2nd, completed a yearly record of 24,683 lbs. of milk, containing 1063.8 lbs. of fat. The Guernsey cow, Murne Cowan, at twelve years old, produced in one year 17,383.5 lbs. of milk and 791.76 lbs. of fat. The average for her three highest yearly records is 19,373.6 lbs. of milk and 911.78 lbs. of fat. In New Zealand the Jersey heifer, Mere, commenced milking at the age of 1 year and 346 days, and produced in one year 12,164 lbs. of milk and 663.64 lbs. of fat. This was said to be a world's record for cows of this age.

Literature. The following is a list of some of the more important dairy literature of the year: W. E. Carroll, "Selecting Dairy Bulls by Performance," in *Utah Experiment Station Bulletin* 153 (Logan, Utah, 1917); C. H. Eckles and L. S. Palmer, "The Influence of the Plane of Nutrition of the Cow upon the Composition and Properties of Milk and Butter Fat: The Influence of Underfeeding," in *Missouri Experiment Station Research Bulletin* 25 (Columbia, Mo., 1916); W. W. Fisk and H. B. Ellenberger, "An Ice Cream Laboratory Guide" (New York, 1917); E. B. Forbes, F. M. Beegle, et al., "The Mineral Metabolism of the Milch Cow: Second Paper," in *Ohio Experiment Station Bulletin* 308 (Wooster, Ohio, 1917); L. A. Klein, *Principles and Practice of Milk Hygiene* (Philadelphia, 1917); C. W. Larson and F. S. Putney, *Dairy Cattle Feeding and Management* (New York, 1917); T. J. McInerney, "Clarification of Milk," in *New York Cornell Experiment Station Bulletin* 389 (Ithaca, N. Y., 1917); Mr. and Mrs. W. J. McLaughlin, *Buttermakers' Short Course* (Owatonna, Minn., 1917); H. N. Parker, *City Milk Supply* (New York, 1917); M. J. Prucha and H. M. Weeter, "Germ Content of Milk—I, As Influenced by the Factors at the Barn," in *Illinois Experiment Station Bulletin* 199 (Urbana, Ill., 1917); *Report of the Special Milk Board of the Massachusetts State Department of Health* (Boston, 1916); J. L. Sammis, "Correct Payment for Cheese Factory Milk by the Babcock Test," in *Wisconsin Experiment Station Bulletin* 276 (Madison, Wis., 1917); W. A. Stocking, *Manual of Milk Products* (New York, 1917); W. van Dam, *Opstellen over Moderne Zuivelchemie* (The Hague, 1916).

DALMATIA. A crownland and titular kingdom of Austria. Dalmatia extends along the Adriatic coast from Croatia on the northwest to Montenegro on the southeast, being bounded on the east by Bosnia and the Herzegovina. The area is 4954 square miles, or about that of Connecticut. The population according to the census of December 31, 1910, was 645,666, as compared with 593,784 in 1900; as estimated in 1913, 667,648. In 1910 the number of Austrian subjects was 634,855; of these, Croatian was the vernacular of 610,669 (96.19 per cent); Italian, 18,028 (2.84 per cent); German, 3081 (0.49 per cent). Of the population in 1910, Catholics numbered 539,074 (83.49 per cent); adherents of the Orthodox Church, 105,338 (16.32 per cent); Evangelicals, 575; Jews, 523. About 82 per cent of the inhabitants were dependent on agriculture. The capital is Zara (Zadar); its population in 1910 was about 14,000, that of the commune about 37,000. Spalato had about 21,000 inhabitants; the commune, 27,492. Ragusa (Dubrovnik) had about 9000 inhabitants, with about 14,000 in the commune; Cattaro, about 3000, with about 6000 in the commune. All of these towns are seaports. Dalmatia has a unicameral diet of forty-three members and is represented in the Austrian Reichsrat by eleven members.

DAMS. In 1917, there were put under way comparatively few large hydro-electric projects requiring the construction of dams of unusual size or character. In the United States the question of the development of water power under national control still remained unsettled and few large irrigation projects involving unusual construction were started. In connection with the development of various internal waterways several dams with accompanying locks designed to raise the water to a height suitable for navigation, were completed, and a few new projects were contemplated. Few new dams for water supply reservoirs were either projected or built, and little was heard of European construction. Some of the more notable works of the year are discussed in the following paragraphs.

Bridgewater, N. C., Development. One of the important projects was the construction of three earth dams and two diversion channels to store water from three rivers for a power house near Bridgewater, N. C. The method of construction followed was to wash the central portion of the filling into place between the outside embankments formed by dumping dry material from trestles. The earth for this purpose was being dug by steam shovels and was dumped by train and washed in place by hydraulic giants, whose water was supplied by pumps mounted on a float in a pool between the outside embankments. The level of this pool rose as the fill progressed. In the southerly dam there was being constructed a spillway requiring 200,000 yds. of concrete for which a crushing and mixing plant using local rock was used. The entire construction involved handling of 5,850,000 yds. of fill and the equipment includes 25 locomotives, 150 to 180 dump cars, and 10 steam shovels. The three dams were to store the water in a very irregular area comprising parts of the basins of the Catawba River, Paddy Creek, and the Linville River, a few miles above the point where these three streams join. The water going over the spillway was to pass down the original bed of the Catawba River. In order to throw the three basins into one reservoir, it was necessary to make cuts through the low divides, separating them. That for the diversion channel between the Catawba and Paddy Creek water sheds involved about 500,000 yards of excavation, while but 50,000 yards would have to be removed between the Paddy Creek and Linville River basins. A number of smaller concrete dams were also involved in the project which was owned by the Western Carolina Power Company and was being executed by the Hadaway Contracting Company. This interesting work was discussed in the *Engineering News-Record* for December 27, 1917.

Mississippi Dam and Lock. The completion of the new Mississippi River Dam lock No. 1 at St. Paul and Minneapolis and its formal opening on July 3, 1917, made available the use of the river for purposes of navigation thirteen miles further up. The original government project adopted in 1894 provided two locks and timber crib dams of approximately 13½ ft. lift each and 2.88 miles apart. The upper works involving lock and dam No. 2 were completed and in operation by May, 1917, which afforded navigation between St. Paul and Minneapolis at least two months in the year. Lock No. 1 was completed in 1909, but as changes were contemplated involving the development of water power, the work was halted and the plans as approved by the River and Harbor Act of June 25, 1910, involving substantial changes, were then carried out and brought to completion in 1917. These involved the abandoning of lock and Dam No. 2, remodeling lock No. 1, for a 30-ft. lift, and the construction of a hollow dam 568 ft. long of a modified Ambursen type. This dam consisted of 36 buttresses faced with pre-molded reënforced concrete beams weighing 5 tons each, 19 of these beams on the upstream and 8 on the downstream face. The dam was seriously damaged in the flood of June 29, 1914, and three sections of the dam, including two sluiceways, were undermined and tipped upstream. In the winter of 1914-15, a number of foundation sections were completed and, after further trouble with high water in August, 1916, the dam was completed in the spring of 1917, so that with the final construction of the lock, which involved the raising of the walls of the old lock, it was possible on July 3, 1917, to open the river for traffic. Until such time as additional operating machinery could be installed, the lock was to be operated between 8 a. m. and 4 p. m. for boats not exceeding 36-ft. beam, although the lock is designed for boats of 78-ft. beam. The new construction which was under the charge of Col. E. H. Schulz, U. S. A., made 15,000 horsepower available, in addition to providing a waterway.

Laurentide Dam. In 1917 a great crest-gated dam at Grand' Mere, Quebec, for the hydro-electric station of the Laurentide Power Company was completed. At this station, there were in service six 25,000 hp. single-runner turbines and three more were later to be installed. This development was begun in 1913, but work was shut down in October of the following year on account of the war. With the increased demand for power, construction was resumed in 1915, and the work was completed early in 1917. The St. Maurice River at this point is divided into two channels by a large island in the middle and where the streams come together there was a rocky gorge with a natural fall of about 45 feet. Previously, there had been wooden dams across each channel affording a lake about four miles long above the falls, and increasing the natural fall to 50 feet so that 20,000 hp. could be developed in 17 turbines. In the later development a series of concrete dams was thrown across the river downstream from the old wooden dams, and with the exception of 330 ft., the west channel was dammed by the powerhouse itself. The island in the centre was excavated, and across the east channel a new dam was constructed with a main spillway extending for about 890 ft. The main spillway had gates of the regular Stoney type handled from steel bridges, while the west spillway consisted of a gravity overfall section with 14 piers supporting a foot-bridge. The east channel dam consisted of a low gravity overfall section with 18 gates; the piers supporting the gate frames were 46 feet long by 25 feet high. On the east end of the main spillway, there was a wing wall, which, springing off at an angle, ties into the high east bank. Inasmuch as the head available had been raised to 84 feet, the turbines used were to operate at the highest head capacity of any except those at Yadkin Narrows, N. C.

Mammoth Dam Failure. One of the notable dam failures of the year was of the Mammoth dam of the Price River Irrigation Company, Utah, which occurred on June 24-25, 1917. This was examined by the State Engineer who said that the reason for the failure was the improper and inadequate construction of the flume portion of the spillway; the inadequate reënforcement of the core wall and the undue level of water in the reservoir in respect to the core, maintained by the management of the company. The failure of this dam which was located in the central part of the valley of the Wasatch Mountains at an altitude of 8500 ft. was serious in that it involved a loss of a large volume of water stored for irrigation and the destruction of the Scofield branch of the Denver and Rio Grande Railway from Colton to Hale. Eleven miles of the main line were destroyed and practically all the bridges were washed away. The destruction of the railroad caused the shutting down of the coal mines in the district, one of the largest producing sections of the West, of which the Denver and Rio Grande was the only outlet. The dam itself at the time of the failure had been built to an elevation of about 70 feet above stream bed and was 160 ft. wide on top with a concrete heart wall along the axis. The reservoir thus formed held about 11,000 acre feet of water. It was an earth-filled structure with a concrete heart wall founded on exposed bed rock in the stream bed and sides of the canyon. The bedrock was sandstone lying in strata sloping gently downstream, and between the strata was either shale or clay. The dam had been raised from time to time as further demands were made upon it, and the original plans and specifications approved by the state engineer were not followed.

Laguna Dam. The Secretary of the Interior, Franklin K. Lane, late in 1917 gave permission to a delegation from the Imperial Valley to connect the canal system with the Laguna dam so as to irrigate the valley. It was suggested that before the construction was undertaken, the people of the district should vote on the plan of building a series of storage dams in the Colorado River and its tributaries, to increase the water supply during low water. These dams would be built under Congressional permission and appropriations, and would be paid for by the water used in irrigation. It was agreed that both matters should be submitted to the people of the Imperial Valley.

Eagle's Nest Dam. An arch dam of remarkably short radius for its height was nearing completion on the Cimarron River, N. M., late in 1917. It was known as the Eagle's Nest dam and was 140 ft. in height, 30 ft. of this amount being below the river bed, and it had a radius of 155 ft. It was 8 ft. wide at the top and 46 ft. at the base, being thrown across the narrow canyon which was 40 ft. wide at the base of the dam and 300 ft. at its crest. This canyon drains the Moreno Valley in Colfax County, and the new dam was to impound 80,000 acre-feet which would irrigate 30,000 acres of the 400,000-acre Charles Springer cattle range.

Dublin Dam. In 1917, a notable earth-filled dam as a part of the retarding basin control of the Scioto Valley above Columbus, Ohio, was designed by the Franklin County Conservancy District. This Dublin dam was to afford adequate protection to the city of Columbus against great floods and was notable for providing a duplex system of outlets, those at the base being so small that they would throttle the summer floods down to the desired maximum flow, and a large funnel-shaped draft tube at a higher level would handle the discharge of the great floods of the spring. The dam in addition would provide a supplementary water supply for the Columbus system although this feature was not an essential element of the duplex outlet scheme. The construction of this dam was temporarily postponed on account of the decision of Franklin County Court that it would cost more than the benefits, but the duplex outlet device which was a distinct novelty received approval from hydraulic engineers.

STANDLEY LAKE DAM. The construction of earth dams in the United States had figured so prominently in American engineering that the case of the Standley Lake dam which was built in 1908-12 about nine miles north of Denver, Col., attracted considerable interest. In 1914, on the outer or downstream face, it developed a pronounced slippage, while in 1916 on the inner or upstream face, a similar movement took place which in the opinion of many threatened the safety of the entire dam. A discussion of this construction figured at a meeting of the Colorado Association of members of the Society of Civil Engineers in which a history of the entire project was given, and the reasons for the sloughing of the material. It was asserted by some engineers that faulty construction and design were involved in the building of the dam and that it did not involve the best practice as shown in other structures of this kind. The original cost was stated at $850,000 for embankments and $150,000 for riprapping, in addition to expense involved for conduits, valves, etc. This construction was summarized in *Engineering News-Record*, May 31, 1917.

NEW SOUTH WALES. One of the projects for a great dam under discussion in 1917 was that of the Upper Murray Storage Project of the Water Conservation and Irrigation Commission of New South Wales. A large number of sites had been explored, in most of which the rock was 200 ft. or more below the surface. Borings and surveys were being made of a possible site of the Mitta Mitta River with the Murray, and also storage possibilities of a site near Juzellic were being considered.

DANIELS, WINTHROP M. See UNITED STATES, *Congress*.

DANISH LITERATURE. See SCANDINAVIAN LITERATURE.

DANISH WEST INDIES. Former colony of Denmark, sold to the United States in 1917, consisting of the three West Indian islands: Saint Croix (area, 84 square miles; pop., 1911, 19,100); Saint Thomas (area, 33 square miles, pop., 1911, 11,150), and Saint John (area, 21 square miles; pop., 1911, 1010). On January 17 the American Secretary of State and the Danish minister to the United States formally exchanged ratifications of the treaty ceding the islands to the United States. The House of Representatives passed a bill continuing for the time being the present government in the Danish West Indies, appropriating $25,000,000 for the payment, and providing that goods containing no more than 20 per cent of foreign material should be admitted into the United States free of duty but an export tax of $8.00 a ton should be charged on sugar exports.

DARBOUX, (JEAN) GASTON. A French mathematician, died in Paris, February 23, 1917. He was born at Nîmes in 1842, studied in that city, then in the lycée of Montpellier, and finally at the Ecole Normale in Paris, where he became doctor of science in 1866, after attracting attention by a brilliant thesis. He taught at the Lycée Louis-le-Grand, the Collège de France, the Ecole Normale, and the Sorbonne, where in 1881 he received the highest of honors in being appointed to succeed Chasles as professor of higher geometry. Before this he had published a number of memoirs, and these increased steadily year by year. In his writing he covered a wide range—analytical and pure geometry, mathematical physics, mechanics, and algebra. Darboux received the Petit D'Ormoy prize in 1883 from the Academy of Sciences, to which body he was elected the next year, and of which he was permanent secretary for seventeen years. In addition to his teaching and scholarly work, he held the post of dean of the Faculty of Sciences from 1889 to 1903 and demonstrated his possession of fine executive ability. One of his accomplishments was the devising of a method by which to approximate the functions of large numbers. In 1870 he helped to found the *Bulletin des sciences mathématiques.* He did important service in editing the works of other mathematicians, Lagrange, Bourdon, Despeyrons, Fourier, Henri Poincaré, but his monumental publication was *Leçons sur la théorie générale des surfaces et les applications géometriques du calcul infinitésimale*, in four volumes, the first of which appeared in 1887. New editions of several volumes appeared shortly before the author's death. From 1902 Darboux was a member of the Bureau of Longitudes, he was a grand officer of the Legion of Honor, and had received the Sylvester medal of the Royal Academy of London for his work. He is to be counted among the chief mathematicians of a century. Consult E. Lebon, *Gaston Darboux, Biographie, Bibliographie* (Paris, 1910).

DARTMOUTH COLLEGE. A non-sectarian educational institution for men, at Hanover, New Hampshire. In the fall of 1917 there were 1016 students and 139 members of the faculty. Volumes in the library numbered 140,000. Productive funds amount to $4,361,751.02 and in 1917 the income from the funds was $178,705.62. More than 600 undergraduates, including the Class of 1917, had entered the military service before August. Dartmouth was founded in 1769. President, Ernest Martin Hopkins, Litt.D., LL.D.

DAYLIGHT SAVING. On January 30 and 31, 1917, the National Daylight Saving Association was formed by a number of delegates meeting in New York at the Hotel Astor. In April, of that year, a bill which had been introduced in Congress by Representative Borland of Missouri and Senator Gallinger of New Hampshire was again offered at the special session of Congress. The bill was favorably reported out of committee and was unanimously passed by the Senate to take effect January 1, 1918. In the House of Representatives, the bill remained in committee and was not brought up for passage during the year.

The plans for the United States as for other nations, was to turn the clock forward an hour during the summer months beginning with the last Sunday of April at 12 o'clock midnight or at 1 a. m., so that during the summer months, the waking hours would include one hour more each day in the sunshine and our hours of sleep include one hour more of darkness. On the last Sunday of September, the clocks would be turned back to the normal time. According to the advocates of daylight saving for the United States, the plan had a three-fold purpose, namely, saving in coal and lighting bills, more time for recreation and farm gardening, and general health betterment. At the end of 1917, the shortage in coal was a further argument which was introduced in favor of the passage of legislation providing for daylight saving.

This measure was first adopted by Germany in the spring of 1916, and it was later put into effect in England, France, Austria-Hungary, Italy, Sweden, Denmark, Norway, and Holland. In 1917, Portugal, Australia, Iceland, Russia, and Bermuda followed in the adoption of the plan, and it was also adopted by the Province of New Brunswick, Canada, and by many cities throughout the Dominion.

A committee appointed by the British Parliament stated that the measure resulted in an estimated saving of coal throughout Great Britain and Ireland of more than 260,000 tons and also a saving in the quantity of illuminating oil. There was a saving of 23 per cent in the amount of light consumed as reported by the various lighting companies. It was estimated that the annual saving for the United States during the five summer months would be from $25,000,000 to $50,000,000 in the lighting bills and in fuel of over 1,000,000 tons. In most of the European countries, the extra hour of daylight afforded opportunity for work in home gardens, and extra activities due to the war. Furthermore, there was much more opportunity for recreation. The bill which was introduced in Congress was endorsed by over 100 leading chambers of commerce, boards of trade throughout the country, by the United States Chamber of Commerce, the Advisory Commission of the National Council of Defense, and various associations devoted to sports. See ASTRONOMY.

DECIMAL COINAGE. The movement for the reform of the British coinage and currency which had been under way for a number of years, took an increased impetus in 1917, and a definite scheme for decimal coinage was proposed and approved by a number of organizations including the Institute of Bankers, the Association of Chambers of Commerce of the United Kingdom, and the Decimal Association, an organization especially committed to the adoption of the international metric system of weights and measures in Great Britain, and its colonies. The plan proposed was to retain the pound sterling unchanged in weight and fineness as the national monetary unit, but to divide it into 1000 parts each to be known as a mil. With the gold sovereign of 1000 mils and the half-sovereign also of gold of 500 mils, there would be the double florin 200 mils; the florin, 100 mils; the half florin, or shilling, 50 mils; and the quarter florin, 25 mils, all of silver; while there would be nickel coins for 10 and 5 mils and bronze pieces for 4, 3, 2, and single mils. It will be apparent that down to the sixpence there would be no change in the existing currency, although the crown, half-crown, and threepenny piece would be eliminated, but the copper or bronze coins would present a considerable variation which would require considerable adjustment in practice and a change of values. This action, while regarded as a progressive step, was not unanimously approved as certain reformers desired the change that would assimilate the British currency to that of Canada and the United States, while others believed that an international system of coinage should be worked out for the entire civilized world, or at least for the allied nations and their dependencies.

DEGAS, EDGAR HILAIRE GERMAIN. A French genre and portrait painter who died on September 27, 1917. He was born in Paris, July 19, 1834. He studied under Lamothe in the Ecole des Beaux-Arts and was a careful student of the old masters in the Louvre and Italy. Although usually classed as an Impressionist he must be considered as an independent, his art having been subjected to several influences and above all else, personal. He at first painted in the manner of Ingres, and was also a great admirer of Delacroix, less for that artist's coloring than for the noble action in his pictures. His softness and fluency of modeling resembled the modeling of Manet, and from the Japanese he learned his absolute freedom of composition, fantastic decoration, and peculiar emphasis. His first works were etchings, portraits, and historical paintings, but he soon turned to genre pictures of modern life. His eyesight began to fail him in 1870 but despite that fact he continued to do brilliant work for some years. Among the large variety of subjects which he treated the best known are his "Race Horses" and "Ballet Girls." The former are distinguished for their fine movement, while the latter were his favorite after the seventies. He scoured the slums of Paris in search of picturesque subjects, but still continued, however, to paint portraits, many of which are masterpieces. His color and brushwork are fine. His latter work is almost entirely pastel. His composition is daring and original; he does not hesitate to bisect figures, his stage pictures often showing nothing but the heads of the orchestra and the legs of the dancers. His work is very popular in America, where he paid a lengthy visit in 1873, as well as in France. The Luxembourg acquired, as a legacy from the painter, Caillebotte, a number of his paintings, including the famous "Dancer on the Stage." Degas's pictures now command enormous prices. At the sale of the Rouart collection in 1912 his "Danseuses à la barre" was sold for 435,000 francs, the highest ever paid in France for the work of a living master. He has had a strong influence on the younger generation of artists. For his life and works consult Lemoisne, in *L'Art de notre temps* (Paris, 1912).

DEJERINE, JULES. A French neurologist, died in Paris, February 27, 1917. He was born in Geneva, Switzerland, of French parentage, in 1849. From the time that he presented his doctorate thesis in 1879 on *Pathology of the Nervous System in Ascending Paralysis*, he devoted himself largely to nervous disorders. By 1886 he had become associate professor in the Faculty of Medicine, in 1901 he was appointed to the chair of the history of medicine and surgery, later to that of internal pathology, and at the time of his death he was clinical professor of diseases of the nervous system. He had a wide experience in hospital work, rising to be physician to the Salpêtrière, and since the beginning of the war he had been in charge of the special central service for nervous affections among the wounded, a post of the highest importance. Lately he had published with his wife, who had long coöperated with him, discussions of the regeneration of nerves after suture. Madame Dejerine, formerly Miss Augusta Klumpke, of San Francisco, was the first woman invested with the honorary title of interne of the hospitals of Paris. The two together prepared a remarkable treatise on *The Anatomy of the Nerve Centers* (1894). With Dr. A. Thomas, Dejerine wrote a book on diseases of the spinal cord. He received the Godard prize in 1879 from the Anatomical Society for research on the lesions of the nervous system in diphtheric paralysis, and in 1886 the Montyon prize from the Academy of Sciences for work done with Landouzy (q.v.) on the pathology of muscular dystrophy. He was elected to the Academy of Medicine in 1908, and was a Chevalier of the Legion of Honor.

DEATH RATE. See VITAL STATISTICS.

DELAWARE. POPULATION. The population of the State in 1910 was 202,322, and on July 1, 1917, it was estimated at 215,160.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	230,000	7,820,000	$10,948,000
	1916	205,000	6,970,000	6,203,000
Wheat	1917	181,000	2,162,000	4,497,000
	1916	124,000	1,860,000	3,013,000
Oats	1917	4,000	128,000	100,000
	1916	4,000	120,000	74,000
Potatoes	1917	13,000	1,235,000	1,606,000
	1916	10,000	900,000	1,125,000
Hay	1917	78,000	*a* 98,000	2,009,000
	1916	80,000	116,000	1,844,000

a, Tons.

TRANSPORTATION. The railroads operated in the State are the Wilmington, Philadelphia Traction Company, the Wilmington, Newcastle, and Delaware City, and the People's Railway Company. The mileage of these roads is, respectively, 89, 15, and 29. The total railroad mileage of all the roads operated in or through the State is about 350 miles.

FINANCE. There is no statement of finance for the State available later than 1914. In that year the receipts amounted to $685,203, and the expenditures amounted to $716,653. There was a balance in the treasury at the beginning of the year of $45,797, and at the end of the year it was $14,418.

EDUCATION. No statistics for education are available later than 1916. In that year there were enrolled in the public schools 32,511, with an average daily attendance of 13,179. There were 493 female teachers and 101 male teachers. The average yearly salary of male teachers was $492.93 and of female teachers $363.34.

CHARITIES AND CORRECTIONS. There is no State supervision of charitable and correctional institutions. The principal body having charge is the Associate Charities of Wilmington, which has a direct supervision over many institutions. These include the Home for Friendless Children, the Home for Aged Women, St. Joseph's School for Orphan Colored Boys, the Florence Crittenden Home, the Delaware Industrial School for Girls, the Home of Merciful Rest, and the Layton Home for Colored Persons, all in Wilmington, and the Delaware Hospital for the Insane, at Farmhurst, the New Castle County Hospital, and several institutions in Dover and Marshaltown.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below.

Important amendments were made in the laws relating to the administration of the State government. An amendment to the constitution was proposed, authorizing the governor to remove any officer appointed by him, but providing for reinstatement by the court if this removal was found to be without cause. Provision was made for a budget system for preparing and enacting annual appropriations. The child labor laws were amended in important details. A workingman's compensation law was enacted. Legislation was passed looking to the prevention of monopolies and unfair discrimination in the buying and selling of commodities, especially food products. Important amendments were made in the laws relating to corporations. An income tax was created with a minimum exemption of $1000. Provision was made for the commitment and care of the feeble-minded or criminally inclined persons. A commission was appointed to study the educational system and make recommendations for changes therein.

STATE OFFICERS. Governor, John G. Townsend, Jr., Rep.; Lieutenant-Governor, Lewis E. Eliason, Dem.; Secretary of State, Everett C. Johnson; Treasurer, William J. Swain, Rep.; Auditor, William G. Roe, Dem.; Attorney-General, David J. Reinhardt, Rep.; Commissioner of Education, Prof. Arthur F. Spaid, Rep.; Commissioner of Insurance, Thomas R. Wilson, Dem.

JUDICIARY. Supreme Court: Chancellor, Chas. M. Curtis; Chief Justice, James Pennewill; Associate Justices, William H. Boyce, Henry C. Conrad, Herbert L. Rice, T. B. Heisel; Clerk, Daniel M. Ridgely.

STATE LEGISLATURE:

	Senate	*House*	*Joint Ballot*
Democrats	7	19	26
Republicans	10	16	26
Majority	3 R	3 D	..

DE MORGAN, WILLIAM (FREND). An English novelist, died in London, January 15, 1917. He came of intellectual and literary stock. His father, Augustus De Morgan, was a famous mathematician and wit who was professor at University College, London, when William was born, November 16, 1839. His mother, a friend of Charles Lamb, wrote *From Matter to Spirit* and edited her husband's *A Budget of Paradoxes*. The novelist's maternal grandfather, William Frend, attacked the established church while at Cambridge and was expelled therefor. But William De Morgan's relation to these persons was not known to the world at large till he was sixty-five years old, for it was then that his first book appeared. After studying at University College School and the college itself, he attended the Royal Academy Schools and started life as a painter. He drew the illustrations for a book written by his sister, Mary Augusta, *On a Pincushion and Other Fairy*

Tales. By 1864 he had set up an establishment to design and produce stained glass, and six years later he turned to the art, or craft, to which he gave most of his life—ceramics. His experiments in lustre resulted in a blue burned-on earthenware, pottery and tiles, prized by connoisseurs. Rather curiously, his artistic interests were combined with a utilitarian bent of mind. He perfected and marketed a smoke-consuming grate, a duplex bicycle gear, and other devices. Neither from these nor from his pottery did he amass wealth.

When recovering from a severe illness, in 1904, he began to write, for his own amusement, a sketch which later expanded into *Joseph Vance: an Ill-Written Autobiography*, published in 1906. This was not intended as his own biography, as many persons have believed. It is said, however, that there is much of his personal history in *Alice-for-Short* (1907), his second novel. Throughout his books, De Morgan so obviously draws upon a rich recollection and experience of men and places, and is so prodigal of detail that each seems to reflect the author in a peculiarly intimate way. *Joseph Vance* took by storm a public supposed by most publishers to have been thoroughly weaned from everything so early Victorian in length and discursiveness. Mr. De Morgan was afraid at first that his obvious debt to Dickens would prejudice his success. His critics used this weapon, but he disarmed them by frankly admitting that he had steeped himself from boyhood in the work of his master. Readers all over the world acclaimed the resemblance, and yet found De Morgan essentially original. While it is human character, above all else, that attracts him, as it does Dickens, his humor has more than a dash of Charles Lamb, his pathos never becomes bathos, and his keen sense for the elemental flavors of "low" society never leads him to burlesque. His writing has a sly subtlety, a nice discrimination, a delicacy that is well fused with the robustness so characteristic of Dickens. He handles frankly his Whitechapel personages, with a faithfulness in dialect and idiom that amazes, but he is equally famous for the attractiveness of his heroines.

He is not concerned with people who do great things in the world, nor, for the most part, with people who do very bad things. His *Somehow Good* (1908) is an absorbing social study and the best-knit of all his books, but it is not a "problem" novel. There is much of the mystic and psychic in De Morgan. One sometimes finds a skeleton in his closet, but oftener a ghost; and he seems to be able to create an atmosphere of emotional intensity by showing his characters guided or affected by unseen forces. Above all, his people are so real, so livable and human, as to persuade you that you have met them in some previous existence and shall meet them hereafter. Some of his men and women, and surely his children, have a perennial bloom upon them.

If one must record De Morgan's defects, they perhaps arise from the fact that he always wrote to please himself. He told his story in his own way, peppering it with coincidences, and interrupting it with tantalizing and digressive commentary. He was no Stevenson, laboriously cultivating a "style"; and, considering that his books sold by the hundred thousand, his readers did not wish him to change his method, or acquire one. After *Somehow Good* came, the next year, *It Never Can Happen Again*, and in the year following that, *An Affair of Dishonor*. This latter was an historical romance, so different in subject and handling from the earlier novels, and so unpleasant, that De Morgan's admirers were aghast. *A Likely Story* (1912), historical and modern romance interwoven, utilizes as background the Italy that the author knew well through many sojourns. Its only moderate success is to be ascribed partly to the failure of its predecessor. In his last book, *When Ghost Meets Ghost* (1914) De Morgan returns to the field of homely, intimate chronicle in which he luxuriates. Here again are characters to be known and remembered. Consult: E. V. Lucas, *Outlook*, 90: 711-18, November 28, 1908; H. W. Boynton, *Nation* (New York), 89: 532-34, December 2, 1909; W. L. Phelps, *Essays on Modern Novelists* (New York, 1910); M. S. Gretton, *Contemporary Review*, 108: 511-20, October, 1915.

DENMARK. A kingdom (the smallest) of northern Europe, with a constitution dated July 28, 1866; consisting of the islands of Zeeland, Fünen, Lolland, etc., the peninsula of Jutland, and the outlying island of Bornholm in the Baltic. Denmark is situated between 54° 34′—57° 44′ N. lat. and 8° 5′—12° 40′ E. long.; its present contracted dimensions being the result of the Dano-German war of 1864, which stripped it of the duchies of Schleswig-Holstein and Lauenburg. Denmark still occupied, together with Sweden and Norway, at the end of 1917, a neutral position in the War of the Nations (q.v.).

AREA AND POPULATION. The area and population by insular and mainland divisions, according to the census taken February 1, 1911, compared with the figures for population as estimated in 1916, are shown in the following table:

	Sq. miles	*Pop. 1911*	*Pop. 1916*
Copenhagen *	27	462,161	506,390
Baltic Islands........	5,117	1,096,458	1,161,163
Jutland	9,898	1,198,457	1,253,809
Faroe Islands........	540	18,000	19,617
Total............	15,582	2,775,076	2,940,979

* The capital city, without suburbs; with suburbs, 605,772.

Male population in 1916 (exclusive of Faroes), 1,415,822; female, 1,505,540. Urban population in 1916, 1,209,975 (1,109,726 in 1911); rural, 1,711,387 (1,647,350). The foreign-born population is less than four per cent of the whole. Living births in 1915 numbered 70,190; still-births, 1773; deaths, 37,175 (surplus, 33,015); marriages, 18,987. Of the births, 11.67 per cent were illegitimate.

During the year 7875 emigrants—3911 men, 3058 women, and 906 children—left Denmark for foreign lands. Of this number, 4305 were Danes, 649 Swedes, and 2921 of other nationalities. Of the total number leaving Denmark 7595 went to the United States.

EDUCATION, ETC. Primary education is free and compulsory between the ages of seven and fourteen. The schools are maintained by local taxation. Secondary schools, when not maintained by the state, are state-aided. Special schools, notably horticultural and agricultural, are state-aided. There is a university at Copenhagen. The established religion of Denmark is Lutheran, which was introduced as early as 1536, the church revenue being at that time seized by the crown, to be delivered up to the university and other religious and educational establishments.

PRODUCTION. Nearly one-half the population live exclusively by agriculture, and one-fourth by manufactures and trade. The common products are wheat, rye, oats, barley, potatoes, cattle, horses, pigs, sheep, and butter. Its manufactures are, for the most part, for home consumption. Its principal imports are coal, manufactured goods (woolens, silks, cottons), iron, hardware, wine, fruit, tea, corn, and colonial produce. In 1908, 2,871,590 acres were under grain crops and 3,103,519 permanent pasture. The tables below give area (in hectares) and production (in quintals) of main crops, with yield per hectare in 1916:

Hectares

	1913	*1914*	*1916*
Wheat	54,044	54,044	61,186
Rye	245,786	245,786	194,045
Barley	241,409	241,409	255,995
Oats	428,387	428,387	430,979
Beets *	32,370	30,900	31,478
Potatoes	61,141	61,141	64,360

Quintals

	1913	*1914*	*1916*	*Qs. ha.*
Wheat	1,822,073	1,279,178	1,640,000	26.8
Rye	4,319,513	4,788,294	2,740,000	14.1
Barley	5,956,184	4,974,452	5,330,000	20.8
Oats	8,290,168	6,729,225	7,500,000	17.8
Beets *	9,300,077	6,018,361	7,360,529	...
Potatoes ...	10,697,378	9,456,627	6,740,266	...

* Sugar beets.

As much of the rye is suitable only for feed, it is estimated that 150,000 tons of wheat and rye will have to be imported before the next harvest. The difficulty in obtaining supplies has made it necessary for the government to permit the use of 20 per cent of barley meal in the manufacture of rye flour.

At present the use of wheat and rye as feed is strictly forbidden. The imports of corn are about 500,000 tons yearly. All the corn, rye, and barley used by the breweries and distilleries must be imported. These establishments use about 7 per cent of the total importation of corn and about 4 per cent of the domestic rye.

With the most efficient agriculture in the world, this country is devoted almost exclusively to crops and herds. Denmark not only obtains the highest average results per acre in the cultivation of the soil, but also uses the agriculture production as raw material for a national industry in further manufacture. It is in the finished form of butter, cheese, and other food products that contain more labor value and less raw material that Denmark exports the output of its agricultural and herding industry. Two-thirds of the population are engaged in agricultural pursuits or in handling the products.

To farmers Denmark makes loans secured by mortgages on property. The loans run for long terms and bear a low rate of interest, 4½ to 5 per cent. During 1916, 565 farmers borrowed sums totaling $1,000,000. This is a larger amount than for the past few years. Since the inauguration of state loans to the agricultural classes in 1899, there have been 8200 loans, amounting to $11,000,000. In 1909 a law was passed allowing the farmers to borrow more on account of the increased valuation of the land and improvements made, and 3103 have availed themselves of the opportunity and obtained a total of $1,600,000 since that time. During 1916 794 received additional advances amounting to $300,000.

Hogs slaughtered during 1916 show a decrease of 11 per cent, from 2,426,000 in 1915 to 2,150,000 for the past year. Early in 1916 the killings were more than usual, but later decreased much below normal. The hog industry is declining because of the difficulty in obtaining feed and the maximum price set for the home market. The export of pork products is also limited to a fixed amount and must be made through licensed shippers.

In normal times Denmark is a large exporter of hides, but during the past two years an embargo has been placed on their shipment. Salted calfskins, however, weighing not over eight kilos and dried calfskins weighing not over four kilos have been on the export list. Notwithstanding the restrictions, prices of skins have reached an unprecedented height.

A comparative live stock table follows:

	Feb. 20, 1917	*Feb. 29, 1916*	*May 15, 1915*
Stallions, 3 yrs. & over	4,948	4,957	4,465
Horses, 3 yrs. & over..	184,062	177,216	177,763
Mares, 3 yrs. & over...	222,450	215,372	214,178
Young animals, 1-3 yrs	80,163	83,202	92,075
Colts and fillies under 1 yr.	46,772	34,668	37,209
Bulls & oxen over 1 yr.	182,767	136,786	156,153
Cows, 1 yr. and over..	1,140,649	1,141,246	1,281,132
Heifers, over one yr...	375,108	373,124	367,243
Calves, under one yr..	744,329	638,840	611,943
Sheep	267,979	254,368	533,084
Pigs	1,980,727	1,983,255	1,918,627
Poultry	8,247,698	......	......

Industrial establishments number about 82,500, with approximately 346,000 workers. Distilleries, 22, with 14,623,000 liters output. There are no later available statistics for creameries in operation than those for 1911, which returned 681, with 104,557 employees.

The sale of all alcoholic beverages has been prohibited since March 1, 1917, a temporary order, calling for returns on all stocks of spirits in the country. The bread card system, introduced April 1, 1917, fixes the daily allowance at 315 grams.

Industries are not permitted to keep going past certain hours, and city gas companies gave notice that they would have to shut down. Municipal governments have begun to enforce strict economy in the use of gas and electricity. Copenhagen, for over three months, was in darkness at night. The trade in coal is strictly regulated, as in wheat, butter, sugar, etc. The use of gas for heating water for washing and bathing is illegal. Candles are used for light in the houses. Anybody using gas or electricity beyond a certain maximum even for the "legitimate" purposes is penalized by paying five times the regular price upon the excess. Street cars run on a reduced schedule. The weather has been favorable to early farm works. A difficult problem is the obtaining of sufficient farm help. The Department of Agriculture has asked the coöperation of the War and Commerce departments to arrange the military maneuvers and the activities of the neutrality guard, so that farmers and their horses will remain at home during the busiest part of the crop season, and to have organized industry and public works loan labor for the farms at these periods. The railroads and shipping lines will be directed to give special attention to the transportation of fertilizers. Cultivation of bogs and waste land is planned for. It is expected that the government will temporarily commandeer land for a period of three years in localities contiguous to large centres of population in order that people may cultivate potatoes and other vegetables, using time not otherwise employed. Cheap loans or contributions of seed, fertilizers, etc., will probably be made.

The egg market has been highly influenced by the war. Denmark imports in ordinary times large quantities of eggs of an inferior quality from Russia and exports the fresh article to Germany and England. During 1916 all imports stopped, and the kingdom was forced to supply home needs and continue exporting entirely from the domestic supply.

Fishing interests prospered during the year, and thirteen new companies with a paid-up capital of $1,500,000 were formed to engage in the deep-sea fishing. The boats used, of fifteen tons and over, are propelled by motors.

With recent fluctuations of price, it is difficult to estimate the value of Danish fisheries. Probably £1,000,000 is as near as possible to the proper figure in peace time—the industry employing about 20,000 men. Since the war began, however, the demand from Germany has been very great, resulting in unprecedented prices. The increases are as follows: 1913, £970,000; 1914, £961,000; 1915, £1,473,000, and 1916, £3,210,000. About half the quantity comes from the Skager Rak, Cattegat, and the Baltic; the other half from the North Sea and the inland fjords. In four years the increase in value is nearly 400 per cent, against which the cost of production cannot be much greater than before, for the Danes use little material beyond their own labor in fishing. In peace time the plaice is the chief product, but, stimulated by the big demand for the haddock from Germany, the Danes have fished the eastern banks of the North Sea, which are now full of these fish owing to no British trawlers having fished there for three years. In 1915 the value of haddock landed by the Danes from these waters was under £100,000, but last year this had increased to nearly £900,000. After haddock the chief kind of fish landed is herring, mostly from the Baltic. Last year £700,000 worth were sold, against £260,000 in 1915. Eels, a fish greatly prized in Germany, produced £400,000, mostly from the inland waterways. The value of the plaice landed was nearly up to the figures for 1915, which were £400,000. Codfish brought in £480,000, compared with a value of £220,000 in 1915.

The chief hindrance to the industrial development of Denmark has been the lack of coal deposits. Denmark produces no coal and is therefore placed at a competitive disadvantage. The country's industries and railways consume annually about 3,000,000 tons, most of which comes from England and Germany. A Danish syndicate was formed in 1916 to investigate and exploit the coal fields of Iceland. During the past two years the country desired to purchase coal from the United States, but freight rates prevented.

COMMERCE, ETC. Economic conditions in Denmark in 1916 were influenced by the war both for the better and for the worse. Prosperity was general, although business in many lines was curtailed and the kingdom was placed on the "ration basis."

Trade has been diverted into new channels during the war and the same policy may maintain when peace comes. The increase of commerce with the United States has been especially marked, and exports to that country have shown a steady growth. Excessive freight rates have militated somewhat against imports and exports. Cable communications are hampered and mails are delayed. The transaction of foreign business has become difficult and the government has been obliged to import for its own account foodstuffs and provisions. The "barter and sale" system has again come into use and merchandise is paid for by the exchange of other goods needed in the kingdom, which is practically bare of raw materials.

The general and special trade was as follows (in kroner):

	1910	*1913*	*1914*
Imports:			
General	634,407,000	817,512,000	795,288,000
Special	577,166,000	740,015,000	717,787,000
Exports:			
General	548,074,000	682,082,000	867,446,000
Special	485,874,000	596,723,000	780,226,000

Principal articles of trade with the United Kingdom are given below with values in thousands of pounds sterling:

Exps. to U.K.	*1914*	*1915*	*Imps. from U. K.*	*1914*	*1915*
Butter	11,039	10,221	Coal	2,207	2,582
Eggs	2,547	1,864	Cottons	580	849
Bacon	9,936	9,129	Iron mfrs.	354	385

The chief articles of import from all countries in 1914 are as follows, values in thousands of kr.: Cereals, 86,466; oilcake, 59,835; fuel, 59,633; wood, 33,102; iron mfrs., 27,502; veg. fibres, 24,007; iron, 19,561; animals, 17,842; woolens, 16,975. The chief articles of export: Butter, 213,018; meat, 205,443; animals, 160,534; eggs, 36,246; skins, 18,663; fish, 11,720; barley, 11,276; ships, 5439; iron mfrs., 3451.

Principal countries of origin and destination, general trade, values in thousands of kroner:

	Imports		*Exports*	
	1914	*1913*	*1914*	*1913*
Germany	264,653	328,308	301,424	178,694
United Kingdom	145.137	134,562	431,605	410,418
Sweden	83,097	71,104	37,960	34,083
Norway	17,475	8,755	22,843	19.300
United States	84,292	86,979	11,661	7,853
Russia	40.490	59,411	14,006	19,275
France	17,512	20,935	6,415	3,342
Netherlands	22,551	21,208	2,241	4.123
Belgium	8,534	10,275	1,480	3,032

Denmark, with other neutrals, has not escaped severe maritime losses since the war began. It is estimated that 85 Danish vessels of 66,000 net tons have been sunk, yet the total registered tonnage was 797,000 in 1916 as against 770,000 in 1914. New capital amounting to $15,000,000 was invested in shipping in 1916, and old companies increased their capital by $3,500,000. In 1913 the net earnings amounted to $2,800,000 and in 1916 to $40,000,000.

Vessels entered in the 1915 trade, 29,758, of 4,147,585 tons; cleared, 30,489, of 1,412,671. Merchant marine (January 1, 1915), 3666 vessels of 587,566 tons. Railways in operation at end of 1915, 2375 miles (1262 state owned); state telegraph service (1916), 2302 miles; telephone wires, 366,403.

FINANCE. Revenue and expenditure for comparative years are shown below, in kroner; A—receipts and expenditures current; B—receipts from investments and funding of debt, and expenses for improvements on domains and reduction of debt:

	1913-14	*1914-15*	*1916-17*
Rev. A	123,874,961	121,780,782	166,037,098
Rev. B	4,209,088	84,894,354	17,987,898
Exp. A	111,404,448	156,130,163	121,023,942
Exp. B	12,185,641	16,457,920	20,161,032

The budget for 1917-18 shows revenue, 163,184,096 kr.; expenditure, 120,628,437. The debt stood, March 31, 1916, at 465,052,521 kr. See FINANCIAL REVIEW.

GOVERNMENT. Under the constitution of 1849 (modified in '55, '63, '65, '66, and 1915), the executive power is vested in king and ministers, the legislative in the Rigsdag or Diet acting jointly with the sovereign. The Rigsdag is composed of the Landsthing (or upper house of 72 members—12 crown nominees appointed for life, and 54 indirectly elected for eight years by electoral bodies, in which large taxpayers are well represented) and the Folkething (or lower house of 140 members directly elected by universal suffrage for four years). Members of both houses are paid about ten kroner a day while the Rigsdag is sitting, and their traveling expenses. The Rigsdag must meet every October, and all money bills must be submitted first to the Folkething. For local government the country is divided into eighteen counties, each under a governor, and these are subdivided into hundreds and parishes. The towns are administered by mayors. Reigning sovereign, Christian Charles Frederick Albert Alexander William, born September 26, 1870; married April 26, 1898, to Alexandrine, Duchess of Mecklenburg (born December 24, 1879); proclaimed king (Christian X) May 15, 1912, upon the death (May 14) of his father, King Frederick VIII. Heir-apparent, Prince Christian Frederick Francis Michael (born March 11, 1899).

King Frederick VIII was born June 3, 1843, and succeeded his father, King Christian IX on the death of the latter, January 29, 1906. He married, July 28, 1869, Princess Louisa, daughter of King Carl XV, of Sweden and Norway, and had seven children. His second son, Prince Karl, born August 3, 1872, was married to Princess Maud of Great Britain, July 22, 1896, and was in November, 1905, elected king of Norway as King Haakon VII. King Frederick was a brother of Queen Alexandra, of King George I of Greece, and of the once Dowager Empress of Russia.

The Danish cabinet ministers, December 1, 1917, were as follows: Carl Theodor Zahle, President of the Council and Minister of Justice (date of appointment, June 21, 1913); Erik Scavenius, Foreign Affairs (June 24, 1913); Jens Chr. Christensen, Minister without portfolio (September 30, 1916); Christopher F. Hage, Commerce (March 20, 1916); Dr. Phil. Edvard Brandes, Finance (June 21, 1913); Dr. Phil. Peter Munch, Defense (June 21, 1913); Sören Keiser-Nielsen, Public Instruction (June 21, 1913); Kristjan Pedersen, Agriculture (June 21, 1913); Ove Rode, Interior (June 21, 1913); Jens Hassing Jörgensen, Public Works (June 21, 1913); Thorvald V. Povlsen, Ecclesiastical Affairs (April 28, 1916); Christian Michael Rottböll, Minister without portfolio (September 30, 1916); Thorvald A. M. Stauning, Minister without portfolio (September 30, 1916); Jòn Magnusson, Minister for Iceland (January 4, 1917); Björn Kristjansson, Minister for Iceland (January 4, 1917); Sigurdur Jonsson, Minister for Iceland (January 4, 1917).

DENNEY, JAMES. A Scottish Free church theologian and New Testament scholar, born in Paisley in 1856, who died on June 12, 1917. He was educated at Glasgow University and at the United Free Church College, where, after eleven years (1886-97) as pastor in Broughty Ferry, he became professor of New Testament language, literature and theology. His exegetical and theological works include: *The Epistle to the Thessalonians* (1892) and *Second Corinthians* (1894) in the "Expositor's Bible;" *Studies in Theology; The Epistle to the Romans* (1900) in the "Expositor's Greek Testament," probably his most important commentary; *The Death of Christ* (1902); *The Atonement and the Modern Mind* (1903), perhaps his greatest theological work; *Jesus and the Gospel; The Way Everlasting,* a volume of sermons.

DE PAUW UNIVERSITY. A co-educational institution under the auspices of the Methodist Episcopal Church at Greencastle, Ind. In the fall of 1917, there were 652 students in the College of Liberal Arts and 184 students in the Music School; also 36 members of the College faculty and 9 members of the faculty of the Music School. Volumes in the general and departmental libraries numbered 33,000. Productive funds in 1917 amounted to $1,343,477 and the income therefrom, $56,804. Rector Hall, a dormitory for women, was erected during the year by Mr. Edward Rector of Chicago, as a memorial to his father, a former trustee. A new administration building, Clem Studebaker Memorial, was also erected in 1917 by members of the Studebaker family as a memorial to their parents. De Pauw was founded in 1837. President, George Richmond Grose, LL.D.

DESTROYERS, TORPEDO BOAT. See BATTLESHIPS, ETC.; NAVAL PROGRESS; SUBMARINE OPERATIONS; SUBMARINES; UNITED STATES AND THE WAR.

DEWEY, GEORGE. A famous American naval officer, died in Washington, D. C., January 16, 1917. He was born in Montpelier, Vt., December 26, 1837, the son of a physician, Dr. Julius Y. Dewey. The family traced their descent from Huguenots named Douai, in the sixteenth century, through Thomas Duee, a Dissenter, who came to New England in 1630. One ancestor fought in King Philip's War, and another was a minute man at the battle of Lexington. George Dewey was sent as a boy to Norwich Military Academy, and expected to go from there to West Point. But when he was ready there was no vacancy, and he accepted instead an appointment to the lately established Naval Academy at Annapolis. Graduating fifth in his class of fifteen in 1858, he was assigned to the steam frigate *Wabash*, flagship of the Mediterranean squadron, and in 1861, as lieutenant, was transferred to the *Mississippi*, in Farragut's fleet. Of this vessel he was executive officer when, after helping to force the forts below New Orleans in the spring of 1862, the fleet ran the batteries at Port Hudson. Dewey was commended for the coolness he showed when the *Mississippi* grounded and had to be abandoned. He was next assigned to a patrol gunboat on the Mississippi, and in 1863 was transferred to the *Agawam*, which was helping to maintain the blockade along the Carolina coast. He participated in the attack on Fort Fisher.

When a lieutenant commander, Dewey was married to Miss Susie Goodwin, daughter of a former governor of New Hampshire, in 1867. She died in 1872, after giving birth to a son. Between this time and the Spanish-American War, the young naval officer, who had already been abroad for several years on the *Colorado*, saw varied service, much of it ashore as lighthouse inspector, secretary of the Lighthouse Board, chief of the Bureau of Equipment and Lighting, and chief of the Board of Inspection and Review. Under the system of slow promotion then operating, he became commander in 1872 and captain in 1884, when he was placed in command of the *Dolphin*, then a dispatch boat and one of four vessels comprising the original white squadron. By 1896 he had been promoted commodore.

In Dewey's appointment as commander of the Asiatic fleet, received in January, 1898, Theodore Roosevelt, then Assistant Secretary of the Navy, had a share. At his suggestion Dewey asked Senator Proctor of Vermont to urge his claims against the influence of Rear Admiral Crowninshield. With the *Olympia* as his flagship, Dewey took command of a squadron of four protected cruisers and three gun-boats. He found himself short of coal and ammunition, and distant some 7000 miles from a base—and he knew trouble was coming. After purchasing two British colliers, he moved away from Hongkong, and when war was declared set out from a small Chinese harbor for Manila, about 600 miles away, where he knew there was a Spanish fleet under Admiral Montojo. His orders were to "capture or destroy" the enemy's force. He entered Manila Bay at daybreak May 1, and soon afterward, with the *Olympia* in the lead, went into action against the eight Spanish vessels. The American fleet kept close together, and made five runs, each of about two miles. Between 5:40 a. m. and noon the Spanish squadron was annihilated and the batteries at Cavite and Sangley Point were silenced—and all without the loss of a man to the attacking force. Dewey's order to Captain Gridley of the *Olympia*, "You may fire when you are ready, Gridley," opened the action and became famous.

In retrospect, Admiral Dewey's conduct after the battle was quite as important as the engagement, if less spectacular. During the four months that he remained in the bay, blockading the city, and waiting for much needed reënforcements, he had a delicate situation to face. Until the army was ready to coöperate, Manila could not be taken and held against the Spanish army. A number of nations had interests in the Philippines, and at one time there were British, French, Japanese, and German warships in the roadstead. In the case of Germany, at least, territorial ambitions seemed to be indicated by the sending of a fleet out of all proportion to the commercial interests involved. This fleet flagrantly transgressed the rules of the blockade, and finally its commander, Admiral Von Diedrichs, had to be brought up short by Dewey, who successfully cleared up a difficult international situation without appeal to Washington. Throughout the controversy, Captain Chichester, the British commander, upheld Dewey.

When it became known that Admiral Camara was on his way from Spain, the American position seemed to be anything but secure. Somewhere in the Pacific were two monitors on their way to Manila, but most of the fleet was in Cuban waters. However, Camara was recalled, and the defeat of Cervera's fleet at Santiago released a number of American vessels for other service. Meanwhile General Merritt prepared to attack Manila, and on August 13 he did so, while the American fleet fired on the forts. The city was captured on the day after the signing of the peace protocol, as later appeared. The cable had been cut, so news of the war's end did not reach Manila till August 16.

When Dewey returned to the United States, after a trip through the Mediterranean, he reached New York, September 26, 1899, and found waiting him a popular welcome unparalleled in American history. The events included a naval review in the North River, receptions, and a great parade which passed through the Dewey triumphal arch at Madison Square. A sword of honor was voted him by Congress. Afterward, it was proposed to erect and furnish a house for the naval hero wherever he might choose, the funds to be raised by popular subscription. Fifty thousand dollars was collected and a house made ready in Washington. Less than two months after he had landed in New York, Dewey married Mrs. Mildred McLean Hazen of Washington, and soon afterward he deeded to her the house given to him. This action, taken, it was said, because the couple preferred to live in Mrs. Dewey's home, raised a storm of indignation that only died down gradually. Immediately after news of the victory at Manila reached home, Dewey had been promoted rear admiral and had been thanked by Congress. On March 2, 1899, he was appointed admiral of the navy. The rank of admiral had been held before in the United States only by Farragut and Porter. In the same year he was made a member of the United States Philippine Commission. From 1900 till his death Admiral Dewey served as president of the General Board of the Navy. At his own desire, he was retained in active service long after passing the age limit. He went regularly to his office in the Navy Building, and his advice was considered to be of the highest benefit to the department. Although an exponent of the larger navy, which should be second to none in the world, he was never a critic of the quality of the American navy. He advocated the continued building of large battleships, and had lately called attention to the services rendered by such vessels in the battle of Jutland. In 1901 he acted as president of the court of inquiry which examined into the famous Sampson-Schley controversy, and he brought in a minority report, crediting Schley with the victory at Santiago.

Dewey was buried January 19, 1917, in Arlington National Cemetery with the highest public honors. After a private funeral service at his home, and a simple but impressive service in the rotunda of the capitol, attended by the most distinguished personages in Washington and conducted by the Rev. J. B. Frazier, who was chaplain of the *Olympia* at Manila Bay, the body was taken under military and naval escort across the city and the Potomac to Arlington. As an extraordinary mark of honor, Secretary Daniels directed that all officers of the navy and marine corps should wear mourning with their uniforms for thirty days. Consult for much interesting material Dewey's *Autobiography*, published in 1913.

DIAMOND JIM. See BRADY, JAMES BUCHANAN.

DIARSENOL. A proprietary preparation of arsenphenol-amine hydrochloride. This drug has the same action and uses as salvarsan (q.v.) and has been extensively used since the supply of the latter drug was shut off by the war.

DICKINSON, DONALD MCDONALD. An American lawyer and politician, popularly known as "Don" Dickinson, died at Trenton, a suburb of Detroit, October 15, 1917. He was born at Port Ontario, Oswego Co., N. Y., January 17, 1846, was taken with his parents to Michigan in 1848, and graduated at the University of Michigan in 1867, after which he was admitted to the bar. He also began to take an active part in the politics of the Democratic party. He was elected chairman of the Democratic State Committee in 1876; and in 1880-85 he was a member of the Democratic National Committee. In President Cleveland's first administration he was postmaster-general in 1887-89, and in 1892 he was chairman of the Democratic National Campaign Committee. He had already become a lawyer of national reputation. He was senior counsel for the United States before the International High Commission on Bering Sea Claims, under the Fur Seal Arbitration (1896-97), and in 1902 was a member of the Court of Arbitration to settle the controversy over port duties between the United States and the Republic of Salvador. He had been president and a trustee of the Detroit Museum of Art.

DIESEL ENGINE. See INTERNAL COMBUSTION ENGINES.

DIPLOMATIC SERVICE. See UNITED STATES.

DIRIGIBLES. See AËRONAUTICS.

DISASTERS. See FIRE PROTECTION.

DISCIPLES OF CHRIST. The total membership of this denomination, which began to develop early in the nineteenth century, and which is known as Disciples of Christ or Churches of Christ, or the Christian Church, and including both the radical and conservative elements, embraced in the year 1917, about 11,200 churches, 1,375,000 members, and 8500 ministers. They rank fifth among the Protestant bodies of the United States. The strength of the denomination lies largely in the Ohio-Mississippi Valley States. It is one of, if not the leading communion of Christians in the States of Kentucky, Indiana, and Missouri; Illinois, Iowa, Kansas, Nebraska, and Texas are largely represented also. In 1917 more than $2,000,000 was raised for missionary purposes.

One of the most significant features of their work is the Men and Millions Movement. This was an enterprise inaugurated four years ago and has a threefold purpose. First to secure a fund of $6,300,000 by individual gifts to equip the mission stations at home and abroad and to increase the endowment of the educational and benevolent institutions. Second, to enlist 1000 volunteers for the mission field. Third, to establish in every church in the brotherhood the every-member canvass as the best plan for securing from every member of the church an offering on the first day of every week for the support of the local church and the extension of the Kingdom in all the world.

The proposed fund of $6,300,000 is to be over and above the regular income of the eight missionary boards and the twenty-six colleges. One man in the communion subscribed $1,000,000 on the condition that $5,300,000 additional be secured. The gifts are all to be paid up within five years. The Disciples have now secured almost $5,000,000 in pledges and will finish the task on June 1, 1918. The president of the General Convention, which meets annually to promote unity, economy, and efficiency among the philanthropic organizations of the church, is Judge J. N. Haymaker, of Wichita, Kan.; the secretary is Robert Graham Frank, of Liberty, Mo.

DISTILLED LIQUORS. See LIQUORS.

DITHMAR, EDWARD AUGUSTUS. An American journalist and dramatic critic, died in New York City, October 16, 1917. He was born May 22, 1854, and after a grammar school education began his newspaper career on the *Evening Post* at the age of seventeen. He was first employed on the New York *Times* in 1877, and continued in the service of that newspaper for forty years successively as dramatic critic, London correspondent, editor of the *Review of Books*, and editorial writer. Appointed while editor in 1882, he became dramatic critic two years later and soon attracted attention by the fairness of his criticisms at a time when the different points of view from which a play might be considered were upheld by different classes of writers with much vigor of dramatic partisanship. Dithmar valued a play according to its effect upon the audience, regardless of traditional rules of the stage and the reputation of the actor. His wide knowledge of dramatic literature and theatrical history was shown in the many articles on celebrities of the stage which he wrote in collaboration with other noted critics. He was largely instrumental in bringing into public recognition the dramatic talent of Clyde Fitch. In 1901 he became London correspondent for his paper, remaining in that position for a year and returning to become editor of the *Times' Saturday Review of Books*. He became one of the editorial writers in 1907, and the latter part of his work was specially devoted to city affairs. He edited the *Memoirs of Augustin Daly* and wrote: *John Drew, a Biographical Sketch* (1900).

DOBRUJA. An eastern division of Rumania, bounded on the east by the Black Sea and on the north and west by the Danube River. It consists of Constantsa and Tulcha (Tulcea) departments, which have an aggregate area of 5998 square miles and, according to the census of January 1, 1913, a population of 380,430. The population has a strong foreign element, including Turks, Bulgars, Tatars, Russians, and Germans. The larger towns are the seaport Constantsa and Tulcha, which prior to the great war had 27,622 and 22,186 inhabitants respectively.

DOCKS AND HARBORS. The conditions of commerce and the necessity of over-seas transportation of men and materials for participation in the great war, brought the importance of the harbors, docks, and warehouses of the Atlantic seaboard into prominence as never before. It was stated that inasmuch as about 80 per cent of the Atlantic foreign trade usually passed through the Port of New York, for that reason various other American ports had not been able to develop or receive an adequate measure of attention. However, one of the first conditions realized in connection with the war, was not only the inadequacy of the Port of New York, even with added and proper terminal improvements, but the necessity for considering other points along the Atlantic and Gulf seaboard for the vast commerce required by the war, and which it was hoped in large part would be retained in later times of peace. In view of the centralized control of national exports at Washington, and the decision for government operation of the railways, it was realized that there would be a much wider distribution of export commerce than ever previously. Furthermore, with the vast tonnage that was being promised by the Shipping Board to amount to some 14,000,000 tons by 1919, it was realized that American commercial interests must arrange at once for adequate dock and harbor facilities. In fact, the ports of the United States, though offering excellent harbors and other natural advantages, as regards developments, were far behind those of Europe, and the facilities for shipment and for connection with inland railway systems were far from adequate. The government soon after the outbreak of war began to commandeer warehouses at the larger ports, and it was believed that this process would continue until a national organization, fully equipped and efficient, was developed. In this connection a notable paper describing the condition and the proposed method of getting supplies to the war as developed by the War Industries Board Storage Committee, was presented before the annual meeting of the Academy of Political Science in New York on December 14, by Francis Lee Stuart, a consulting engineer who was chairman of the Terminal Ports Facilities Committee, a part of the Storage Committee of the War Industries Board.

New York and New Jersey Port Development. The New York and New Jersey Port and Harbor Development Commission was appointed in 1917 after legislation by the legislatures of the two States. This action was taken in order to secure proper coördination and coöperation in the development of the port of New York, considering it as a unity rather than as a matter for State rivalry. It was further planned to gain the assistance and coöperation of the Federal government, and while the functions of the commission were designed for times of peace rather than war, yet it endeavored to aid in an immediate attempt to coördinate the many branches that were being carried on in the harbor and the immediate vicinity. William R. Wilcox was chosen chairman of the commission, General George W. Goethals, the builder of the Panama Canal, was chief consulting engineer, and Julius H. Cohen was the counsel of the commission.

The vast increase in exports required by the Allies and the American forces in Europe, as well as the actual transportation of American troops, presented a number of difficult problems at the Port of New York, and a special War Board was created with Irving T. Bush, president of the Bush Terminal Company, at its head. New conditions rendered imperative the improvement of various waterways around the city, and both the Secretary of War and Navy urged the Rivers and Harbors Committee of the House to make provision for the deepening of the Hell Gate Channel to forty feet. Such action was required not only from a commercial but from a naval necessity, in order that the largest battleships could utilize Long Island Sound in reaching the Brooklyn Navy Yard. In this connection it was also proposed that the entire Upper Bay of New York Harbor should be dredged to a depth of thirty-five feet and that every foot of shore front should be made available. This would involve the removal of Robbin's Reef and dredging an area 4000 yards wide and five miles long, giving access to the New Jersey shore.

Bayonne Terminal. The project for a large terminal port and warehouse at Bayonne, N. J., on the lines of the well-known Bush Terminal at Brooklyn, N. Y., was defeated on July 31 when the citizens of Bayonne by a vote of 3408 to 1075 refused to sanction the issue of $10,000,000 of bonds for the combined warehouse and terminal port which was to be leased to the Bush Terminal Company for operation for 50 years.

A Free Port at New York. In December, the United States Tariff Commission held hearings in the City of New York at which special attention was given to the establishment of a free port or free zone at that city. This was an entirely new proposition and came as a part of the scientific thought and treatment of external commerce that was beginning to be made. There had been no free ports or free zones in ports in the United States into which foreign material might be imported free of duty, and there stored, assembled, repacked, manipulated, or manufactured, without custom house inspection, charge, or interference. These materials at the convenience of the business plans of the owners, after such treatment could be reloaded or reshipped as desired, but of course if passing into the ordinary commerce of the country would be subject to the ordinary customs inspection and charges.

In the United States bonded warehouses had been the only facility of this kind, but with the development of foreign commerce, it was believed that the establishment of a free zone would relieve congestion of the piers and appraisers' stores and would simplify the formalities depending upon bonding and drawbacks in the case of reëxported goods. Furthermore, in the free zone, the owner would have at all times absolute control of his merchandise, and free access to his goods, while manufacturing could be carried on and show rooms established. The free zone would furthermore release capital tied up, and add to the more rapid movement of ships and cargoes.

Another argument for the creation of a free zone was that it would involve the building of large specialized terminals with dry docks, repairing and shipbuilding facilities, and would develop materially the position of the United States in foreign markets. It was believed that this proposition for New York and other American ports would receive the favorable consideration of the New York Chamber of Commerce and other commercial interests. The oldest example of a free port in the world was that of Hamburg, Germany, where the zone devoted to such trade and industry now occupies a large area.

Commercial interests on the Pacific coast also advocated the establishment of a free port at San Francisco, advancing virtually the same reasons as were suggested for a free port at New York, but with the appropriate application to Pacific trade.

MOBILE MUNICIPAL DOCKS. The citizens of Mobile, Ala., voted on August 13 to authorize the City Commission to arrange a bond issue of $600,000 for the construction of a municipal water terminal. The project comprised concrete wharves, piers, and bulkheads, railroad connections to the water front, and dredging to a depth of thirty feet. Warehouses were also included in the design but would require a further appropriation. Previously in the year it had been announced that the first unit of a water terminal for the Gulf Mobile and Northern R. R. at Mobile, Ala., was to be commenced. This unit was to consist of a pier and slip large enough for several ships, and a series of warehouses, aggregating some 4000 lin. ft. of berthing space and 2000 lin. ft. of warehouses, some of which would be five or six stories high. Another unit of double the capacity of the terminal and also 2000 lin. ft. of lumber docks were also contemplated.

BALTIMORE AND OHIO PIERS AT BALTIMORE. At pier No. 5 at the Locust Point terminal at Baltimore of the Baltimore and Ohio Railroad, an automatic car-loading machine with electric weighing devices was installed whereby the loads could be delivered direct to the cars by means of a conveyor, so that the continuous use of a switch engine and crew for spotting involved an electrically operated car loader with belt conveyor and receiving hoppers, and could be used with ore, sulphur, clay, coal, and other bulk commodities, loading either box or open cars with equal facility. Three tracks on the pier, which is 800 ft. long, can be used in connection with this conveying system whose element's consist of a receiving hopper, the car-loading machine, and a conveyor, which are placed on the centre tracks so that the two outer tracks can be used for cars. The receiving hoppers which are mounted on standard trucks running on the centre track, receive the material from the hatches of the vessel along side, and transfer it to the main conveyor which is a 30-in. belt extending the entire length of the pier. The loading machine also runs on the centre track and has a loading arm and intermediate conveyor, the latter being movable in a horizontal plane through a swing of 270 degrees, while the loading arm has a horizontal movement through 270 degrees in addition to sufficient vertical movement to clear the side of the largest open car. There is a cabin on the latter for the operator, and an automatic weighing device so that the machinery can be adjusted not only to weigh but to supply the material at any desired rate and at any desired amount.

During the year the Virginia Railway started work on an addition to the coal terminal at Sewalls Point near Norfolk. The improvement involved a car dumper, elevator, six conveyor cars, track scales, yards, and additional electrical equipment.

PORTLAND, ORE. On the Pacific coast, port development was active and on June 4, 1917, the city of Portland, Ore., voted to issue $3,000,000 in bonds for the improvement of its port facilities, constructing an elevator with a capacity of 1,000,000 bushels in connection with a dock or warehouse approximately 1000 feet long and about 175 feet wide. The proposed plans involved pier and slip constructing, with a large open dock area for bulk material. The cost of the site and the immediate construction would require $2,000,000 of the appropriation and the remainder was to be held in reserve for future requirements.

GREAT LAKES. In 1917, engineers and municipal authorities in cities on the Great Lakes had reached the conclusion that harbors in small rivers had become obsolete for modern traffic, and that large waterfront developments should be undertaken instead. This was particularly true in the case of Milwaukee, where a report was presented in favor of closing up the river to general traffic, restricting it simply to barges, and building a viaduct along each side of the river within the waterway with various bridges connecting. The river was crossed by numerous drawbridges which had become a hindrance to the street traffic of the city, while they really impaired navigation and did not permit of adequate dock facilities such as might be secured on the lake front. Any such improvements likely to be undertaken would involve model port construction and probably would require more capital than would be available until after the war.

There was, during 1917, a vast amount of port improvement either under way or contemplated on the Great Lakes. This was being executed by the United States government, by city and municipal authorities, and by various private corporations especially those interested in railway, shipping, or manufacturing. The more notable work of the year included at Chicago, the extension of the government breakwaters and the construction of two breakwaters to protect the City Municipal Pier. At Milwaukee, bulkheads or revetments on the lake shore north of the river and along Jones Island to protect the fill for reclaiming land on which municipal terminals might be located, were under construction and plans were developed for both the inner and outer harbors, although there was no complete plan for a comprehensive development. At Duluth and Superior, ore docks were being erected, while the port of Duluth-Superior was to be dredged by the government. At Ashland, Wis., a large ore dock was building for the Chicago and Northwestern Railway at a cost of $1,000,000 in addition to other terminal work. The Soo Line was building a second ore dock, a concrete structure costing about $1,500,000. At Duluth, a new wharf or bulkhead wall was being built by the Michigan Central Railroad with about 2½ acres of made land, two steamship companies coöperating in the work. This new structure extended to the harbor line for about 100 ft. beyond the former wharf. At Toledo, a large coal and freight dock was under construction in connection with the power plant of the Toledo Railway and Light Company, while at Cleveland, the Cuyahoga River was being straightened. Important developments at Buffalo in connection with the deepening of the entrance to the outer harbor, and the construction of a stone and concrete superstructure on the former timber breakwater were the most important works. The Barge Canal terminals, which were to cost about $11,000,000, involved the Erie Basin, with two new piers at which lake vessels and canal barges were intended to meet, and the Ohio Basin, where work was begun to provide harbor space for canal barges and access for lake vessels except those of the largest size. The Buffalo River was being deepened and enlarged upstream, a bascule drawbridge was installed on the railway, and bridges permitting the passage of large vessels.

A notable ore dock with steel and concrete, an unusual combination, was completed at Two Harbors, Minn., Dock No. 2 of the Duluth and Iron Range R. R. is 1368 ft. wide inside the pockets with top walks outside of the pocket and with its deck 80 ft. above the lake. There is a double row of pockets 114 on each side, holding 300 to 350 tons each. The pockets are 12 ft. long, so that trains of 24-ft. ore cars can dump into alternate pockets without shifting. In this ore dock, a superstructure has a frame of structural steel with free case and front walls of the bin, while the deck and the partition walls between the bins were of concrete which was poured into place. This work was further interesting in that a large amount of concrete was placed during the cold weather requiring artificial heat for the concrete, and also the protection for the work of construction, the temporary housing being built of four wooden ore cars and moved as required with the progress of the work. This interesting construction is described in the *Engineering News-Record* for August 9, 1917.

Another interesting ore dock on the Great Lakes was dock No. 5 of the Duluth, Messalie and Northern Railway at Duluth, Minn. This dock was 2304 ft. long and had 384 pockets of 300-ton capacity each, or a total capacity of 115,200 tons. The height from water to rails was 80 ft. 6 in. and the width of the dock was 56 ft.

CHICAGO. The notable 3000-ft. Municipal Pier for the city of Chicago, which has been described in a previous issue of the YEAR BOOK (see YEAR BOOK for 1915), was further improved by the construction of two breakwaters to protect ships docked along its exposed length. The government breakwater afforded partial protection on the north and east but there is so large an area that a considerable sea was developed at the pier. Accordingly the municipal government built to the south of the pier a rock-filled pile breakwater 2350 ft. long and was about to build a similar breakwater north of the pier 200 ft. long. These breakwaters not only will serve to protect the municipal pier, but were to form the dock walls of other piers and could be extended as required when additional commerce made such action necessary.

BUREAU OF YARDS AND DOCKS. In connection with the important developments in the United States Navy, Captain Charles Wellman Parks, Corps of Civil Engineers, U. S. N., was nominated on December 18, 1917, by President Wilson to be Chief of the Bureau of Yards and Docks of the Navy, succeeding Rear Admiral Harris, who recently resigned to become general manager of the Shipping Board. Rear Admiral Parks had been in the service of the Navy Department for twenty years, and was the engineer for the construction of the large naval station at Pearl Harbor, Hawaii.

BRITISH EMPIRE. Late in the year, Lord D'Abernon, who was chairman of the Dominions Royal Commission, brought before the London Chamber of Commerce the necessity of improving the British harbors so as to afford facilities for ships of greater draught and to develop commerce by providing additional facilities. Lord D'Abernon suggested that the deepening of the harbors would involve an expenditure of about £4,000,000 to provide for vessels of 38 feet draught at practically all the important harbors of the mother country, the Dominion of Australia, and the Commonwealth of New Zealand by the Cape route. At the Port of London, he suggested that the first step would be the deepening of the Thames by increasing it to 30 feet at low water of ordinary spring tide, and other changes made in order to accommodate vessels of 38 feet. He proposed to increase the depth of water at the Princess Landing Stage at Liverpool at a cost of £500,000, while at Southampton provision was also made for ships of 38 feet draught. Thus with an expenditure of £1,000,000 the first-class English ports were to be made to take vessels of the required depth. He suggested further developments at Cape Town, Durban, Melbourne, and other ports in Australia and New Zealand.

The war did not interfere with the consideration of new dock and harbor schemes at Portsmouth, Plymouth, and Falmouth. It was believed that additional port facilities for ocean shipping were required on the southern coast, and at Portsmouth it was proposed to dredge an entrance channel to a depth of 35 feet at Langstone Harbor immediately to the east of Spithead. A tidal quay was also to be constructed and a large wet dock and graving dock. The estimated cost of the proposed works was stated at about £2,000,000. At Falmouth, which had been used by ocean liners as a port of call, it was proposed to develop commercial shipping facilities at St. Just on the eastern side of the harbor. Preliminary plans called for a pier 3000 feet long, three jetties affording a depth of water alongside from 36 feet to 42 feet, and two large graving docks 1200 feet and 1000 feet in length respectively. A connecting railway 12 miles in length would connect St. Just with the Great Western Railway system. The estimated expenditure was £1,300,000. At Plymouth a substantial addition to the merchant ship accommodations facilities in the form of deep water wharves, a pier, and a large dry dock, and in addition new warehouses were contemplated, and furthermore it was suggested that the various improvements and the various existing port authorities be merged into a Harbor Trust for Plymouth. The Plymouth and Falmouth schemes received the provisional approval of the Admiralty, and it was stated that no official objection would be made to the Langstone project.

FRANCE. In connection with the participation of the United States in the European War, considerable dock and harbor work were carried on both by France and by the United States at the various ports at which the transports and other American shipping landed. This involved a considerable construction of docks and wharves, warehouses, and railway connections in order to insure the rapid transport of supplies. The rapidly increasing traffic at the Port of Rouen led to the approval of plans for certain necessary extensions involving the construction of an additional 6 kilometres of quays, the deepening of the bed of the river Seine as far as Rouen, the control of the water-course by the construction of dykes and quays, and dredging operations for maintaining the stream at the desired depth.

The Netherlands. A scheme was proposed during the year for deepening the waterways from Rotterdam to Dordrecht, forming a regular seaport at the latter town. The aim was to follow the arm of the Meuse which at the east end of the island of Roozenburg branches from the Rotterdam channel. The distance to Dordrecht is 27 kilometres and the channel would be deepened to permit vessels of 8 m. (26 ft. 3 in.) to proceed that far. The new channel would be from 200 m. to 260 m. with a narrow channel 100 m. broad, 7½ m. deep, the middle of which for a depth of 50 m. would be 8½ m. deep. The cost was estimated at 4,000,000 gulden or $1,650,000. Whether this improvement would be undertaken in the near future or not was quite questionable as the use of the port of Rotterdam had diminished materially during the year and from 10,203 vessels in 1913 with a tonnage of 12,785,861, there had been a decline to 2979 vessels with 3,191,830 tons in 1916.

Sweden. Preparations were being made for a harbor at Käringberget, forming a deep water port for Gothenburg. This new harbor would have adequate depth and it was proposed to construct quays 12 m. deep, amounting in the aggregate to 3400 m. (11,200 ft.) in addition to which there was 915 m. (3000 ft.) of quay with a depth varying from 4.8 m. (16 ft.) to 9 m. (29 ft. 6 in.). The cost of this project was estimated in excess of $5,000,000. In Stockholm, a large harbor extension was under way, while other Swedish towns such as Malmö were extending their harbor facilities.

Chile. During the year, the Chilean Embassy at Washington asked for public bids for the foundation work involved in the improvement of the Port of Antofagasta, which was the principal port of export for the sodium nitrate industry, a trade which was important during the war and which Chile was anxious to hold after its conclusion. The government proposed to spend about $8,500,000 on this work, a loan having been authorized on September 4, 1916, for this purpose.

At Valparaiso, Chile, progress was made during the year on the harbor improvement, and especially in the construction of the breakwater at Punta du Pratt. This breakwater consisted of a shore section built of concrete blocks with a protective bank of pell mell blocks for the deep water section. This shore section was 165 m. long and extended outward from the shore to a depth of 18 m. The deep water section was 123 m. in length and extended from the depth of 18 m. to a depth of 57 m. at the outer end and consisted of a rubble mound on which were placed six monoliths built of reënforced concrete each 20 m. by 16 m. wide and 15 m. deep, the top being 1 m. above the water when set. These monoliths were built in a temporary dry dock from which they could be launched and after being set they were filled completely with concrete, the gross weight of each being 13,370 tons.

Argentina. During the year the new masonry basin at the military harbor near Bahia Blanca, Argentina, which was the largest in South America, was completed and successfully tested. Its principal dimensions were length, 183 m. (600 ft.), depth to the sill at the entrance, 9.75 meters (32 feet), width at the entrance, at the base, 35 metres (114 feet 10 inches), at the top 36.67 metres (120 feet 4 inches).

Brazil. The development of the Port of San Sebastian, in the State of São Paulo, Brazil, and the construction of a railway from that city inland to Campinas and Pouso Alegre, was a project under discussion during 1917. The San Sebastian Railway was to be about 350 miles in length of the Brazilian standard-gauge of 5 ft. 3 in., with a 20 mile section ascending the Serro do Mar with very steep grades. The Port of San Sabastian was said to have a depth of from 60 to 160 ft., while Santos, which is now the only railway terminal on the coast of São Paulo, is not accessible to large steamers. The cost of the new harbor was estimated at $3,756,000.

Japan. The Yokohama Pier, which had been undergoing reconstruction for six years, was completed in 1917, being enlarged to 1200 ft. long and 138 ft. wide. The depth, alongside, which was formerly only 26 ft. at low water of spring tides, was increased to 35 ft. and thus provides for the largest steamers engaged in the Pacific passenger trade. Two large double-storied sheds were included in the improvement.

New South Wales. At Port Kembla there was nearing completion one of the finest harbors of New South Wales. This port was fifty miles south of Sydney, and was to be the principal shipping port for coal from the southern fields. The construction also involved breakwater and wharfage accommodations and had been under way for fifteen years.

Bibliography. The American Association of Port Authorities, through its secretary, William J. Barney, of 110 West 40th Street, New York City, during the year published a *Selected Bibliography on Ports and Harbors and Their Administration, Law, Finance, Equipment and Engineering*, a valuable reference work for engineers engaged in this field, especially in view of the fact that the terminal and port situation was uppermost in many minds. The book gave references to periodicals and books under a number of headings.

DOLOMITE. See Geology.

DOMINICA. See Leeward Islands.

DOMINICAN REPUBLIC. An independent West Indian state, occupying the larger and eastern part of the island of Haiti. The capital is Santo Domingo.

Area and Population. The republic is divided into twelve provinces. The estimated area is 48,577 square kilometres (18,756 square miles). The number of inhabitants is not known with accuracy; some authorities hold that it does not exceed 600,000. Data published in 1917 placed the total, as calculated for December 31, 1915, at about 795,400, distributed by provinces as follows: Santo Domingo, 127,976; Santiago, 123,972; La Vega, 105,000; Pacificador, 90,569; Seybo, 68,135; Azua, 59.783; Puerto Plata, 55,864; Monte Cristi, 41,439; San Pedro de Macoris, 28,000; Barahona, 17,891; Samaná, 12,675. Most of the inhabitants are Spanish-speaking and of mixed white, negro, and Indian blood. Estimates published in 1917 gave the city of Santo Domingo about 40,000 inhabitants, and Santiago de los Caballeros about 45,000, but it is not unlikely that these figures are too high. The town of San Pedro de Macorís is supposed to have about 20,000 inhabitants; Puerto Plata, 16,000; Samaná, Sánchez, La Vega, Azua, Moca, and Monte Cristi, about 5000 each. In 1914 and 1915 respectively, reported births numbered 24,319 and 29,431; deaths, 6393 and 6762; immigrants, 3930 and 6448.

EDUCATION. Primary instruction is free and nominally compulsory. Reported number of schools in 1915, 518, with 16,124 pupils. By presidential decree of November 29, 1914, the Professional Institute at Santiago de los Caballeros was formed into a university. This institution is reported to have four chairs in law, four in medicine, three in mathematics, three in pharmacy, and three in dentistry. The state religion is Roman Catholicism, but liberty of conscience and worship prevails.

PRODUCTION. The Dominican Republic has one of the richest and most productive soils in the world. The most important crops commercially are sugar cane and cacao. Cacao is grown in the eastern part of the country, and tobacco is a profitable product of the western part. Other crops are coffee, cotton, and bananas and other fruits. Cattle raising is a well-established industry, and there is a considerable production of honey and wax. The forest wealth of the country is notable, including many kinds of trim, construction, and cabinet woods. Their exploitation is hindered by the lack of good roads. Mining is of little importance, but recently a good copper property has been developed near San Cristobal, not far from Santo Domingo. There is little manufacturing, but cigars and cigarettes are made in increasing quantities for domestic consumption.

COMMERCE. In 1916, imports and exports were valued at $11,664,430 and $21,527,873 respectively, as compared with $9,118,514 and $15,209,061 in 1915. Import and export values have been as follows, in thousands of dollars:

	1906	*1911*	*1913*	*1914*	*1915*	*1916*
Imp. …	4,065	6,950	9,272	6,729	9,119	11,664
Exp. ….	6,586	10,996	10,470	10,589	15,209	21,528

Leading imports in 1915 and 1916 respectively, in thousands of dollars: cotton manufactures, 1913 and 1722; iron and steel manufactures, 1201 and 1562; rice, 909 and 1080; breadstuffs, 693 and 738 (including wheat flour, 585 and 622); oils, 514 and 545; meat and dairy products, 541 and 530; manufactures of vegetable fibres (other than cotton), 360 and 509; vehicles and boats, 146 and 409; leather and its manufactures, 297 and 386.

Below are shown values of principal exports, in thousands of dollars:

	1913	*1914*	*1915*	*1916*
Raw sugar.........	3,651	4,943	7,671	12,028
Cacao	4,120	3,896	4,864	5,959
Leaf tobacco.......	1,122	894	973	1,433
Drugs, dyes, etc....	22	53	4	378
Coffee	257	346	458	317
Sugar cane..........	...	63	196	296
Cattle hides.........	152	164	185	213
Goatskins	89	90	85	122
Molasses	...	94	100	121
Wax	118	130	113	111

The increase in export values in 1915 and 1916 was due more to advance in prices than to increase in quantities. The sugar export in 1914 amounted to 101,429 metric tons, in 1915, 102,801 metric tons, in 1916, 122,643 metric tons; cacao, 20,745 tons, 20,223 tons, and 21,053 tons. The export of leaf tobacco in 1916 amounted to 7825 tons; coffee, 1731 tons; molasses, 18,752 tons.

Imports by countries, in thousands of dollars:

	1913	*1914*	*1915*	*1916*
United States......	5,769	4,452	7,361	10,163
United Kingdom...	730	567	631	481
Porto Rico........	63	134	376	378
France	274	161	93	152
Spain	211	98	145	151
Germany	1,678	928	95	...
Total, incl. others	9,272	6,729	9,119	11,664

Exports by countries, in thousands of dollars:

	1913	*1914*	*1915*	*1916*
United States......	5,601	8,573	12,044	17,412
Porto Rico........	29	91	249	425
France	888	288	189	288
United Kingdom...	242	187	84	105
Germany	2,068	819	6	...
Total, incl. others	10,470	10,589	15,209	21,528

COMMUNICATIONS. The reported length of railway in operation is 282 kilometres (175 miles); in addition, private lines for sugar plantations, 362 kilometres (225 miles). Telegraphs, 16 offices, with 352 miles of line. Telephone, 1175 miles of wire. In 1917 there were five radiotelegraph stations. Post offices, about 100.

FINANCE. The unit of value is the American dollar. Estimated revenue and expenditure for the fiscal year 1916, $4,468,000 and $4,406,567 respectively. Revenue is derived chiefly from import duties. There has been an American receivership of customs since 1905 and American control of other national revenue and of national expenditure since 1916. Funded debt in 1916, $14,743,000; unfunded debt, $7,000,000.

GOVERNMENT. The legislative power is exercised by a congress of two houses, the Senate and the Chamber of Deputies. Senators (12 in number, one from each province) are elected by indirect vote for six years; deputies (24, two from each province), by indirect vote for four years. Suffrage is held by male citizens over 18 years of age. The executive authority is vested in a president, who, according to the constitution, is elected by indirect vote for six years. He is assisted by a cabinet of seven members. In 1913, José Bordas Valdés became provisional president (April 14). After the insurrection of 1914, Bordas Valdés resigned (August 27), and Ramón Báez was elected provisional president by the Congress. At elections held later in 1914, Juan Isidoro Jiménez was chosen president, and on December 5 was inaugurated for the six-year term. Jiménez, after constant trouble with Congress, was impeached at the beginning of May, 1916, and withdrew from office on May 7. On July 26 following, Francisco Henríquez y Carvajal was proclaimed provisional president.

See UNITED STATES, *Foreign Relations.*

DOS PASSOS, JOHN RANDOLPH. An American lawyer, died in New York January 27, 1917. Of Portuguese-American descent, he was born in

Philadelphia in 1844 and was educated in that city, where he was later admitted to the bar. When Philadelphia was threatened in the Civil War, he enlisted in the State militia. Mr. Dos Passos early removed to New York, where he devoted himself to banking, corporate, and financial law, in which branches he became a recognized authority. He was much in demand among financiers, and aided in the formation of large business combinations, such as the Sugar Trust and the American Thread Company. Besides many pamphlets on legal and economic subjects, he published a *Treatise on the Law of Stock Brokers and Stock Exchanges* (2 vols.); *The Interstate Commerce Act; Commercial Trusts;* and *The American Lawyer.*

DOURINE. See Veterinary Medicine.

DRAFT. See Canada, *History;* Military Progress; United States and the War.

DRAINAGE. There was no great activity in the drainage of agricultural lands in 1917. The war occupied the attention of most of the world, so that public works generally were neglected. However, the advantages of drainage as an immediate means of extending the area available for crop production has caused some activity in that line and much discussion of possibilities.

United States. In the United States particularly much attention was given to drainage as an emergency measure for increasing agricultural production. In many sections the wet lands had been cultivated or were in well-settled regions and their use involved no questions of colonization or settlement, and in many instances not even the providing of buildings or equipment, but merely the removal of surplus water or protection from overflow. In this respect drainage had an advantage over other methods of extending the agricultural area. This was particularly true in irrigated regions where large areas once productive have become water-logged or alkaline.

During 1917 there was considerable activity in the reclamation of such irrigated lands by drainage. The United States Reclamation Service, which is engaged primarily in the construction of irrigation works and their operation, reported that its greatest construction activity of the year was in drainage rather than irrigation. The report estimated the area of land in government projects that were in need of drainage at 142,508 acres, with much larger areas that should be protected by drains. The acreage given was about 12 per cent of area irrigated by the service in 1917. The service estimated that more than 200,000 acres in its projects were protected by drains already installed and that nearly 300,000 acres would be protected when projected drains were completed. It is probable that the government projects may be considered typical of other projects so far as drainage conditions are concerned, and on that assumption nearly 2,000,000 acres of irrigated lands are in need of drainage if it has not been provided.

A new type of drain developed in the irrigated arid region was the relief well. In many places the water which was injuring agricultural land was coming to them in some pervious underground strata, and was under some hydrostatic pressure. Wells bored into these strata and connected with drains allowed the water to rise to the drains and be carried away without being forced into the soil. This relieved the pressure in the water-bearing strata and prevented injury to the lands. This plan had been found very effective in some sections where all attempts to drain the lands by the usual methods had failed.

In the humid sections of the United States there had been some drainage work, but very little compared to that going on a few years previously. Where drainage enterprises had been carried out for lands which had been cultivated or were in the midst of cultivated lands, the drained lands had been utilized very promptly, but where large areas of swamp lands requiring clearing and settlement had been drained, the putting of these lands into cultivation had been a slow process, and large areas were awaiting use.

Flood protection work received much attention during the year. Congress passed the "Humphreys" flood control bill authorizing the expenditure of $45,000,000 for flood control on the Mississippi River and $5,600,000 on the Sacramento River. This law required that local communities supply one-half as much money as was expended by the Federal government on the Mississippi River. The appropriation for this work was carried in the general river and harbor bill which failed of passage, so that this work could not be begun. The flood protection work attracting most attention during 1917 was that of the Miami Conservatory District in Ohio. Plans for the work of protection of lands and cities in the Miami Valley were completed and bids for the work were called for November 15, 1917. Most of the bids were rejected, however, although some small parts of the work were contracted for. The district sold most of its bonds at a good price and it is probable that the work will proceed. Another large enterprise is the protection of 66,000 acres in Sutter Basin, Cal., from overflow and its drainage by pumping. The reclamation of lands by flood protection and by drainage for the purpose of increasing food production and also to provide farms for returning soldiers was being urged upon Congress and it seemed likely that some provision for investigating the possibilities in that line would be made and perhaps some plans for public aid in drainage.

New drainage district laws were enacted in Minnesota and West Virginia, and the constitution of Michigan was so amended as to make it possible to sell district bonds. North Dakota created a boundary drainage commission to coöperate with adjoining States in investigating and reporting upon the best methods of drainage and flood control along boundary streams. New Mexico provided for the organization of drainage districts composed of lands in United States Reclamation projects; and other States made minor changes in their drainage district laws. The legislation of Congress on this subject has been mentioned.

Other Countries. The pressure for increased food production in England brought about the issuing of an order requiring land owners to take steps to provide proper drainage for lands which had been injured by inadequate drainage. In connection with government irrigation works in Egypt, carried on by the British in that country, drainage works to reclaim large areas in the Nile delta were planned, but the carrying out of these plans was postponed by the war. In the meantime relatively small areas were being dyked and relieved of surplus water by pumping. The cost of this ran as high as $80 per acre in some instances, but it was considered a paying investment. Officials of the Public Works Department were recommending that the government itself reclaim this land as an investment and dispose of it at the advanced price due to its drainage, rather than sell the land at a nominal price to be reclaimed by private enterprise.

In practically every other country reclamation of lands by drainage was stopped by the war. It seemed likely, however, that as the pressure for food became greater in countries where land was scarce, drainage would be resorted to as the best means of extending the agricultural production.

DRAMA, American and English. In England and America, the theatre year was disappointing, not only from the point of view of commerce but also from the point of view of art. The theatre-going habit was affected by the hardship resulting from the war; and a shrinkage in the usual demand for dramatic entertainment was accompanied by a corresponding shrinkage in the quality of the supply. In England the theatres continued to do a fair-to-middling business; but most of the attractions offered were trivialities intended merely to divert the public from the contemplation of matters involving life and death. In America, the record of the year, as registered at the box-office, was divided sharply into two parts. Until—and for a long time after—the acknowledgment of a state of war between the Imperial government of Germany and the people of the United States, the theatre continued to be patronized beyond custom and beyond desert. Then, suddenly, in the autumn, there came an unexpected slump in patronage. This slump occurred coincidentally with the imposition of the new war-tax of ten per cent on theatre tickets, the record-breaking fall in the prices of stocks and bonds, and—to sum the situation up—the general sense of financial insecurity which was suggested to the public by the burdens and the problems of the war. In November and December, New York was reduced—to state the matter in the parlance of the theatre—to the status of a two-weeks stand. No new attraction, however interesting in itself, could expect to draw sufficient patronage to warrant its continuance beyond a bare initial fortnight. This unaccustomed situation was hard upon the dramatist, the actor, and the manager. The theatre, indeed, had fallen on evil days. In this moment of commercial panic, our drama, instead of standing firmly on its feet, resorted weakly to a series of side-steppings and evasions. It was soon assumed that, in bad times, the public would prefer bad plays to good; and this fallacy resulted in a general depreciation of the season from the point of view of art.

Most of the leading British dramatists were silenced by the deep preoccupations of the year; and nearly all the current London entertainments were composed by men of secondary calibre. Sir James Barrie was the only British playwright of the highest rank who added to his fame in 1917. Two one-act plays of Barrie's—both inspired by the war—were shown in London early in the season and were repeated subsequently in New York. Both were masterpieces, according to their kind: *The New Word,* a delicate essay in a reticent and tingling mood of comedy; and *The Old Lady Shows Her Medals*, an appealing essay in a touching mood of pathos. Later in the year, this dramatist disclosed in London an interesting full-length play —*Dear Brutus*—which discussed the thesis that the destiny of men is written in themselves instead of in their stars. A timely satire by Henry Arthur Jones, entitled *The Pacifists*, immediately failed in London, despite the fact that it discussed intelligently a topic of more than momentary interest. Pinero, Shaw, Galsworthy, and other leading British dramatists, remained silent throughout the course of this unusually unproductive year.

The American public, however, was first offered in 1917 an opportunity for seeing several works of British authorship that had been written in the past. John Galsworthy was represented by a popular but inartistic production of *The Fugitive*, a sympathetic rendering (in San Francisco) of *A Bit o' Love*, and an almost adequate exhibition of *The Little Man*. George Bernard Shaw was represented by a belated production of *Misalliance,*—a poor play which was acted admirably by a company rehearsed by William Faversham. The first and only play of Gilbert K. Chesterton—entitled *Magic*—was performed for a few weeks in New York and was accorded a *succès d'estime.* But one of the triumphs of the season in America was a dramatization of George du Maurier's novel, *Peter Ibbetson*, which was made by John Raphael, who died a few weeks before his play was carried to success by the acting of John and Lionel Barrymore and Constance Collier.

The *entente cordiale* between America and France was emphasized more than once in the offerings of the theatre-season. In fact, 1917 may come to be regarded by future historians of the American theatre as "the season of Molière." Early in the year, an impression unusual in emphasis was registered by Charles D. Coburn with his production of an English version of *Le Malade Imaginaire.* This performance was soon followed by an offering in English, of *Sganarelle, ou Le Cocu Imaginaire,* which was exhibited by The Washington Square Players. In November, *Les Fourberies de Scapin* was played, in French, by the company of Jacques Copeau, as the leading feature of the inaugural performance that marked the transference of Le Théâtre du Vieux-Colombier from Paris to New York. The beneficent erection in New York of a new and fine French theatre under the far-seeing patronage of the government of France is an event that calls for special emphasis amid the records of the year. During the course of the later months of the theatre-season, three other interesting plays of French authorship were offered to the public, in translation, through the ordinary channels of theatric commerce. These were *The Torches*, by Henry Bataille, *L'Elévation*, by Henry Bernstein, and *The King*, by Armand de Caillavert, Robert de Flers, and Emmanuel Arène.

The American theatre has always been traditionally hospitable to plays of foreign authorship. In 1917, it offered a more or less sympathetic hearing to a Russian play called *Nju*, by Ossip Dimov, an Irish play called *Grasshopper*, by Padraic Colum, a German play called *Frühlings-Erwachen*, by Frank Wedekind, a Swedish play called *The Deluge*, by Henning Berger, and

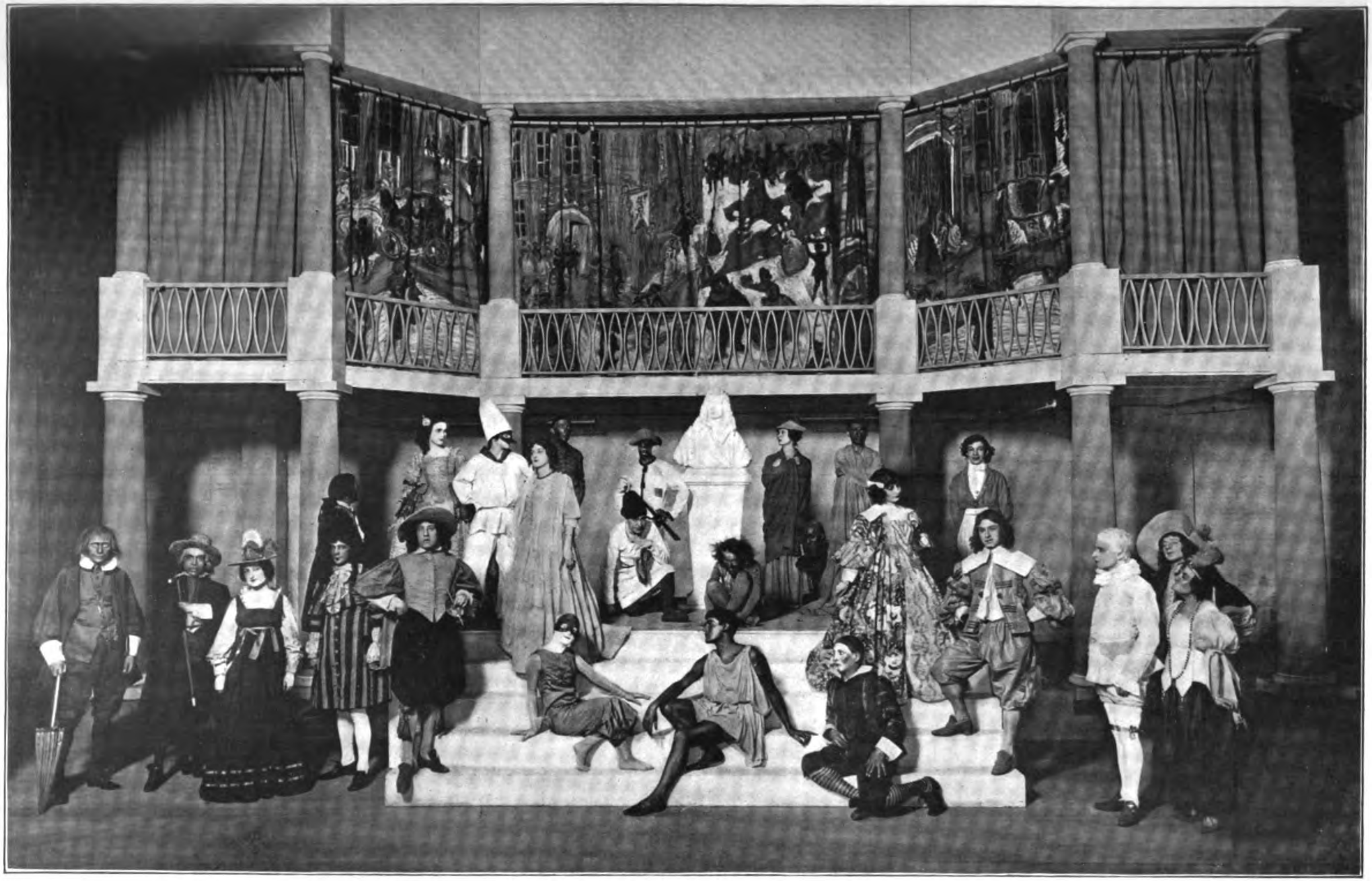


Photo by White Studio

UNVEILING THE STATUE OF MOLIÈRE AT THE OPENING OF THE
THÉÂTRE DU VIEUX COLOMBIER

a Hungarian play called *Over the 'Phone,* by Imre Foeldes.

It is an interesting fact that nearly all the plays inspired by the current war went down to speedy failure. Even Bernstein's *L'Elévation*—which had been highly heralded in Paris—did not attract a paying patronage in New York. The reason for this fact is that the theatre cannot compete successfully against the first pages of the daily newspapers. When a man has paid two dollars for the privilege of entering a theatre, he does not like to listen to the same sort of story that he has just read, on his way to the playhouse, in a penny paper. *Out There,* by J. Hartley Manners, was a war-play of admitted merit; and it was fairly well received. More conventional and sentimental—and also less successful—was *Lilac Time,* by Jane Cowl and Jane Murfin. [Later in the season, these feminine collaborators brought forward a traditional but rather interesting melodrama entitled *Daybreak.*] The two best and biggest war-plays of the year were shown only to restricted audiences. These were *The Iron Cross,* by Elmer L. Reizenstein, and *As It Was in the Beginning,* by Arturo Giovanitti. The former was produced by The Morningside Players and the latter by The Stage Society of New York. Both plays were meritorious as human documents; but the commercial managers judged rightly that there was no money in them.

The weightiest American play of the year was *'Ception Shoals,* by H. Austin Adams. This piece—although excessively didactic—was truthfully imagined, and soundly and solidly constructed; and it was wonderfully acted by Madame Nazimova. Valuable also—as a document and as a well-made play—was *Hamilton,* a transcript from American history by George Arliss and Mary Hamlin.

The year was notable for certain undeniable advances toward the ultimate achievement of high comedy in America. A new writer, named Clare Kummer, added to the laurels gained from *Good Gracious, Annabelle!* by the production, in quick succession, of *A Successful Calamity* and *The Rescuing Angel.* The second of these three plays was the best; the third was disappointing; but the fact was registered emphatically that Clare Kummer is an author to be reckoned with. All three plays were charmingly produced by Arthur Hopkins. William J. Hurlbut increased his reputation, among "those who know," by delivering two tenuous but brilliant comedies, both of which suffered the fate of commercial failure at a time when commercial success was almost unattainable. These two delightful comedies were called *Saturday to Monday* and *Romance and Arabella.* Edward Childs Carpenter—an author of unique and undeniable ability in the field of sentimental comedy—advanced his reputation with two plays,—*The Pipes of Pan,* an idyll of the poetry of middle age, and *The Three Bears,* an idyll of the poetry of youth. In a somewhat similar vein of romantic sentiment, a sure success was registered by Robert Housum with *The Gipsy Trail,*—a piece in which the note of youthfulness was sung forth with full-throated ease. Less emotional, more intellectual, and much more brilliantly satirical were *Why Marry?,* by Jesse Lynch Williams, and *The Family Evil,* by Lawrence Langner,—two clever comedies of American authorship which showed the influence of Shaw. *Why Marry?* is indeed a composition that possesses more than passing merit. It constitutes a contribution to American literature as well as to the American drama. From many points of view, this satirical comedy may be regarded as the best American play of the year. Admirable also, for its spirit of burlesque and its tone of youthful and enchanting impudence, was *Madame Sand,* a "biographic comedy" by Philip Moeller, that was played delightfully by Mrs. Fiske.

In America, there is a free and easy kind of comedy or farce—written either in a local dialect or in a momentary slang—that attains the dignity of art by virtue of its obtrusive truth to human nature. Supremacy among the compositions of this class was attained in 1917 by *Business Before Pleasure,* by Montague Glass and Jules Eckert Goodman,—the third and best of a series of plays depicting the personal adventures of two real and vivid characters,—Abe Potash and Mawruss Perlmutter. A clever composition (in accordance with the formula established long before by George Cohan) was *A Tailor-Made Man,* by Harry James Smith. Amusing, also, was a satire of the solemnly-regarded propaganda of eugenics, entitled *The Very Idea,* by William le Baron.

The vogue of the so-called "trick play" suffered a decline in 1917. Not more than three new compositions were presented which claimed attention by virtue of a new and unexpected juggling of the technique of the drama. These three inventive and unprecedented fabrications were *De Luxe Annie,* by Edward Clark, *Eyes of Youth,* by Max Marcin and Charles Guernon, and *Yes or No,* by Arthur Goodrich.

Among the American melodramas of the year, *The Knife,* by Eugene Walter, was the most exciting, and *Tiger Rose,* by Willard Mack, was the most effectively produced. Interesting, also, were *The Masquerader,* by John Hunter Booth, and *The Scrap of Paper,* by Arthur Somers Roche and Owen Davis. *The Claim,* by Frank Dare and Charles Kenyon, and *Broken Threads,* by Ernest Wilkes, though less successful, were worthy of a note of record.

In the secondary mood of sentimentalism, the most successful American production of the year was *Polly With a Past,*—a jejune but entertaining comedy by Guy Bolton and George Middleton. Other essays in this *genre* that deserve to be recorded were *The Willow Tree,* by Harrison Rhodes and J. Harry Benrimo; *Barbara,* by Florence Lincoln; and *Seremonda,* an anachronistic melodrama in blank verse by William Lindsey.

Among the minor and less memorable plays of the vintage of 1917 were *The Brat,* by Maud Fulton; *Pals First,* by Lee Wilson Dodd; *Mary's Ankle,* by May Tully; *The Country Cousin,* by Booth Tarkington and Julian Street; *Lombardi, Ltd.,* by Frederic and Fanny Hatton; *Here Comes the Bride,* by Max Marcin; *On With the Dance,* by Michael Morton; *The Land of the Free,* by Fannie Hurst and Harriet Ford; *Losing Eloise,* by Fred Jackson; and *Blind Youth,* by Willard Mack and Lou Tellegen.

Two sumptuous and impressive spectacles were produced, during the course of the year, at the Manhattan Opera House, by the enterprising firm of Elliott, Comstock and Gest. The first of these was *The Wanderer,* a Biblical tale adapted from the German by Maurice V. Samuels, and the second was *Chu Chin Chow*, an oriental narrative by Oscar Asche.

Among the notable "revivals" of the year, the following should be recorded:—Ibsen's *Ghosts* [produced by the Washington Square Players]; Pinero's *The Gay Lord Quex* (produced by John D. Williams); Barrie's *The Professor's Love Story* (produced by George Arliss); *The Lady of the Camellias*, by Alexandre Dumas *fils* (produced by Ethel Barrymore); R. C. Carton's *Lord and Lady Algy* (produced by William Faversham); William Vaughan Moody's *The Great Divide* and A. E. Thomas's *Her Husband's Wife* (both produced by Henry Miller); and George M. Cohan's *Get-Rich-Quick Wallingford* (produced by Hale Hamilton and Edward Ellis).

The "little theatre" movement was continued successfully throughout the year. In New York, The Washington Square Players, The Provincetown Players, and The Neighborhood Players added to their laurels. A new and interesting note was struck by a company of Negro Players—assembled by Mrs. Emilie Hapgood—in a repertory of Negro Plays, written with extraordinary insight by Ridgely Torrence. In the autumn, The Greenwich Village Theatre was opened, in New York, under the direction of Frank Conroy; and the initial bill gave promise of a fine fulfillment in the future.

In the early spring, Sir Herbert Tree appeared before the public of New York in a series of farewell performances, in the part of Colonel Newcome. At the close of this engagement, he returned to England; and, shortly afterward, he died. The sudden taking-off of this celebrated actor-manager was one of the outstanding incidents of the year. A few days later was announced the death of William Winter, the dean of dramatic critics in America,—a good and faithful servant of the theatre who "saw life steadily and saw it whole" and wrote with an inspired ear for prose.

Sarah Bernhardt—at the age of two and seventy—undertook another tour of America in 1917; and the season was made memorable also by the reappearance—on the new stage of Le Théâtre du Vieux Colombier—of the finest of all living artists in the world,—Yvette Guilbert.

See Literature, English and American; French Literature; German Literature.

DRONE, Eaton Sylvester. An American legal writer and newspaper editor, died at Zanesville, Ohio, February 2, 1917. He was born at Zanesville in 1842 and graduated from Harvard in 1866. Three years later, after taking an M.A., he went to New York and was admitted to the bar. Through articles and his book *Law of Property in Intellectual Productions* (1879), he became known as an authority on copyright. In legal writing he was associated with George Ticknor Curtis. After contributing for a number of years to the New York *Herald*, he became its editor in 1893 and held this post till ill-health forced his retirement in 1905.

DRUMONT, Édouard (Adolphe). A French writer and anti-Semite leader, died in Paris February 3, 1917. Born in Paris in 1844, he studied at the lycées Bonaparte and Charlemagne, and early entered journalistic work on the *Univers*, *Nain jaune*, and *Bien public*, remaining on the last of these for four years. He became editor of the *Liberté* and art critic of the *Petit Journal*, and wrote also for the *Gaulois*, *Monde*, *Contemporaine*, etc. Up to 1886 he was known for such historical works as *Les fêtes nationales de la France*, *Mon vieux Paris*, which was crowned by the Academy, *Papiers inedits du duc de Saint-Simon*, and the *Journal des Anthoine;* for a romance, *Le dernier des Trémolin;* and for a play, with Dollfus, *Je déjeune à midi.* In the year named he began, with his *La France juive devant l'opinion*, a campaign against the Hebrews in France which lasted all the rest of his life and made him an acknowledged leader of anti-Semitic feeling. He did not confine himself to generalities but mentioned names without reserve. The consequence was that he was involved in duels with Charles Laurent, director of the *Paris*, and with Arthur Meyer of the *Gaulois*. He was severely wounded, through his opponent's trickery he claimed in court. Drumont had to pay a fine for publishing the book, and it just escaped being suppressed. But he continued his attacks in *La fin d'un monde*, *La dernière bataille*, *Gambetta et sa cour*, and *Le secret de Fourmies*. The *Libre parole*, which he founded in 1892 and of which he became director, served as the chief organ of the anti-Semites. For defaming Burdeau, Drumont was condemned to three months in prison and to pay a fine of not less than 80,000 francs. The Dreyfus case brought from him *Les Juifs et l'affaire Dreyfus* and the Panama scandal *De l'or, de la boue, du sang: du Panama à l'anarchie.* Elected as a Socialist deputy in 1898, Drumont had a stormy career in the Chamber which gave him material for violent attacks on political methods and machinery. His later books included *Les tréteaux du succès: figures de bronze ou statues de neige*, and *Vieux portraits et vieux cadres.*

DRY DOCKS. See Docks and Harbors.

DUNKARDS or **DUNKERS.** See Brethren, Church of the.

DUPUIS, Nathan Fellows. A Canadian educator and author who died on July 23, 1917. He was born at Portland, Ontario, in 1836. He graduated from Queen's University (Kingston) in 1866 and a year later was appointed professor of chemistry in that institution. In 1880 he was transferred to the department of mathematics. He was for a number of years public inspector of schools for Kingston. His publications include: *Elements of Geometrical Optics; Junior Algebra; Elements of Synthetic Solid Geometry; Elements of Trigonometry for Practical Science Students; Spherical Trigonometry and Astronomy; Descriptive and Mechanical Astronomy.*

DUTCH EAST INDIES. Possessions of the Netherlands, lying between Australia and the Asiatic continent. Capital, Batavia.

Area and Population. The Dutch East Indies consist of two main divisions: (1) Java (16 residencies) and Madoera (1 residency); and (2) the outposts (17 provinces). Area (for the outposts approximate) of Java, Madoera, and the outpost provinces, 739,547 sq. miles; population December 31, 1912, 37,979,377. A table detailing the area and population will be found in the 1916 Year Book.

Production. Area (1915) under rice, 6,940,000 acres; sugar cane, 438,872 (sugar production, 1,343,304 tons); tobacco, 427,000; indigo, 17,000; other cultures, 7,712,000. Government coffee plantations (Java) produced (1915) 3032 tons; production from private estates, Java 19,000 tons, Robusta, 29,375. Tobacco: 38,003,802

Photo by G. E. Beresford

SIR JAMES MATTHEW BARRIE
Author of
"THE NEW WORD," AND OTHER COMEDIES

© Paul Thompson

JESSE LYNCH WILLIAMS
Author of
"WHY MARRY?"

SIR HERBERT BEERBOHM TREE
British Dramatist

LORD DUNSANY
(Edward J. M. D. Plunkett)
Author of
"PLAYS OF GODS AND MEN"

FOUR DRAMATISTS PROMINENT IN 1917

kilograms in Java, and 19,072,599 in Sumatra. Tea (Java), 46,183,334 kilos; cacao, 1,643,440 kilos. Tin from the government mines at Banka and from private mines at Billiton and Riouw (1915-16), 18,597 tons. Coal production (1915), 631,676 tons; petroleum, 1,643,503 tons. Gold, silver, diamonds, copper, and manganese are mined.

COMMERCE. Government and private trade, merchandise and specie, are given for three years (in florins):

Imports

Government:	*1908*	*1912*	*1915*
Mdse.	7,667,549	20,229,755	17,759,971
Specie ...	8,850,000	5,170,000	3,050,000
Private:			
Mdse.	243,544,983	380,669,597	373,620,181
Specie ...	20,499,027	29,553,007	6,275,610
Total.....	280,561,559	435,622,359	402,705,762

Exports

Government:	*1908*	*1912*	*1915*
Mdse.	16,856,649	51,411,500	11,868,091
Specie ...	......	609,072	715,650
Private:			
Mdse.	452,823,332	533,617,014	759,235,131
Specie ...	1,084,623	1,410,614	192,232
Total.....	470,714,604	587,048,200	772,011,104

The Netherlands is the important country of destination for exports, which consist mainly of sugar, coffee, tea, indigo, cinchona, tobacco, copra, and tin. A large export of rice goes to Borneo and China. There were entered at the ports in the 1915 trade 7682 steamers, of 4,070,617 tons, and 3872 sailing vessels, of 225,900.

FINANCE, ETC. Estimated revenue, 1917, 346,111,605 florins; expenditure, 404,357,117. A. W. F. Idenburg was appointed governor-general, August 20, 1909. Dr. J. P. (Count) Van Limberg Stirum, appointed October 28, 1915, was governor-general in 1917.

DUTCH GUIANA, or SURINAM. A Netherlands colony (between 46,000 and 49,000 square miles) on the northern coast of South America. Population (January 1, 1916), 88,750 (exclusive of negroes in interior forests). Total at the end of 1913, 86,134. Emigrants are employed under contract on plantations. Sugar production, 1915, 14,747,100 kilograms (1910, 12,015,100); molasses, 112,000 liters (164,100); rum, 1,693,500 litres (797,800); cacao, 1,464,200 kilos (1,683,000); coffee, 609,700 kilos (202,320); corn, 1,867,900 kilos (1,323,000); rice, 910,682 kilos (1,993,700). Gold yield, 5,280,200 grams (1,081,476); gold export, 1,619,843 florins (1,446,073). Total imports 1915, 5,445,866 florins; exports, 6,949,315. Revenue 1917, 3,198,000 florins; expenditure, 4,818,000; subvention, 1,620,000. Governor 1917 G. Y. Staal.

DUTCH REFORMED CHURCH. See REFORMED CHURCH IN AMERICA.

DUTCH WEST INDIES. See CURAÇAO.

DWIGHT, HENRY OTIS. An American Congregational missionary, born in Constantinople in 1843, died on June 19, 1917. He entered the Ohio Wesleyan University, but left in 1861 to serve in the Civil War. He was business agent of the American Board of Commissioners of Foreign Missions (1867-72), edited missionary publications in the Turkish language for seven years, and from 1875 to 1892 was also Constantinople correspondent of the New York *Tribune.* Meanwhile (1880) he had been ordained for the ministry. After resigning his commission as missionary in 1901 he was connected prominently with various missionary and Bible societies in the United States. He edited *Report of the Ecumenical Conference on Foreign Missions,* and *the Encyclopædia of Missions,* and wrote *Turkish Life in War Time; Treaty Rights of American Missionaries in Turkey; Constantinople and Its Problems; Blue Book of Missions; A Moslem Sir Galahad; Centennial History of the American Bible Society.* He contributed to the NEW INTERNATIONAL ENCYCLOPÆDIA. .

DYESTUFF AND DYESTUFF SITUATION. See CHEMISTRY, INDUSTRIAL.

EAKLEITE. See MINERALOGY.

EARTHQUAKES. Few damaging shocks came to notice in 1917, but important losses were involved in the Central American disturbances of June 7 and December 25-29. On the former date the city of San Salvador was nearly destroyed by earth tremors which seemed to have originated close by and to have been precursory to the volcanic outburst of Quetzaltepeque (see VOLCANOES) which inflicted further damage in the outlying district. The zone of destruction was small and much of the property loss was owing to the weak nature of the structures typical of the country. Guatemala City, capital of the Republic of Guatemala and a prosperous commercial city of nearly 100,000 persons, was laid in ruins by a series of quakes which began Christmas night and continued at intervals until December 29, when a final heavy shock that transmitted its tremors over thousands of miles destroyed all that had been left after the previous shakings. The collapse of the presidential palace, post office, cathedral, and Colon theatre, in addition to other important buildings, was reported, while the total damage ran into many millions of dollars. Much suffering was inflicted upon the inhabitants who were driven into the open and for a time were without shelter or sufficient food. The list of fatalities was small, since the preliminary tremors gave due warning of the ensuing disaster. The number was estimated at less than 100.

SEISMOLOGY. As a measure of the frequency of earthquakes in periods of relative seismic repose, the tabulation of the California occurrences for 1916, prepared by A. H. Palmer, is of considerable interest. Altogether 326 stations in that State were employed in recording observations, so that few if any sensible tremors may be supposed to have escaped detection. The number of separate records obtained was sixty-six, of which only two developed an intensity corresponding to class six of the Rossi-Forel scale. Most of the disturbances are believed to have set up by fault slips. From plotting of their origins on the map it appeared that more occurred on the coast than in the interior and more in southern California than in the northern part of the State. The San Francisco district was represented by a single shock.

EAST AFRICA PROTECTORATE. The territory lying between the Umba and Juba rivers from the former German East Africa to Italian Somaliland and Abyssinia, and inland to Uganda; a British dependency. These territories comprehended under the name "The East Africa Protectorate" include the whole of the coast from the Umba to the Juba rivers, granted on a 50-year lease by the sultan of Zanzibar, as also the vast territories in the interior bounded in part by international conventional lines. The southern boundary was defined by the Anglo-German conventions of 1886, 1890, and 1893; that on the east (along the Juba) and northeast, by an agreement with Italy (1891). On the west the protectorate adjoins that of Uganda. The administration is carried on under the colonial office. Estimated area, about 200,000 square miles. The population is estimated at about 4,000,000, including about 25,000 Asiatics and 3500 Europeans. A great portion of the country is pasture land or barren waste, but there are extensive districts of great natural fertility. The protectorate is divided for administrative purposes into seven provinces, which are subdivided into districts and sub-districts: (1) Seyidie, (2) Ukamba, (3) Tanaland, (4) Jubaland, (5) Kenya, (6) Naivasha, (7) Nyanza, of which the centres of administration are respectively Mombasa, Nairobo, Lamu, Kismayu, Fort Hall, Naivasha, and Kisumu. The East Africa Protectorate also includes the Witu Protectorate, a small tract of country at the mouth of the river Tana. The British Protectorate was proclaimed November 19, 1890. In March, 1891, the Imperial British East Africa Company undertook the administration of the country, from which they withdrew on July 31, 1893. Witu is now regarded for administrative purposes as part of Tanaland.

Mombasa, which is connected with Europe by telegraph, possesses perhaps the finest harbor on the east coast of Africa (population about 30,000, of whom 200 are Europeans). There is also telegraphic communication along the coast between Mombasa and Lamu, and between Mombasa and Entebbe, the capital of the Uganda Protectorate. There are also extensions to Kiambu, Nandi, Wadelai on the Nile, and Fort Hall. The Uganda Railway has its terminus at Mombasa, which is connected with the mainland by a railway bridge 1732 ft. in length. Nairobi, the capital of the protectorate, and central station of the Uganda Railway, has a population of about 14,000, of whom 700 are Europeans. There are also some 400 Europeans in the immediate neighborhood of Nairobi. In 1914, of the 639,640 acres (11,250 freehold, 628,390 lease), classed as productive, 630,005 were devoted to grazing, 9635 to crops. Cattle, sheep, and ostriches are raised. The crops include grain, coconuts, cotton, sisal, rubber, tobacco, coffee, and fruits. The worked mines yield carbonate of soda, limestone, graphite, and gold. The cost of construction of the Uganda (Mombasa-Victoria) Railway (618 miles) to March 31, 1915, was approximately £6,409,481. Five steamers are operated on Victoria Nyanza in connection with the railway. The telegraph system, exclusive of the lines in Uganda, has 2321 miles of line (the railway line has three wires). Commercial and financial figures follow:

	1908-9	*1910-11*	*1913-14*	*1914-15*
	£	£	£	£
Imports	797,158	1.000,346	2,147,937	1.469.210
Exports	436,313	962,911	1,482,876	1,004.796
Revenue ...	485,668	609,585	1,123,789	984,756
Expenditure.	703,103	682.041	1,115.899	1,151,730
Shipping * .	1,838,159	1.364.740	1,791,081	2,362,317

* Tonnage entered at Mombasa and Kilindini.

The import figures are exclusive of railway material, government stores, and specie. The United Kingdom supplied imports to the value (1914-15) of £636,857, and received exports valued at £601,317; British possessions, £386,383 and £80,845; the United States, £84,410 and £50,033.

ECOLOGY. See BOTANY.

ECONOMIC ASSOCIATION, AMERICAN. See POLITICAL ECONOMY.

ECONOMIC GEOLOGY. See GEOLOGY.

ECTOPRITE. See MINERALOGY.

ECUADOR. A republic on the Pacific coast of South America, between Colombia on the north and Peru on the south. Capital, Quito.

AREA AND POPULATION. The area cannot be stated with accuracy on account of unsettled boundaries. A tentative estimate is 299,600 square kilometres (115,676 square miles); or, including the Galápagos, 307,243 square kilometres (118,627 square miles). Ratifications of a boundary treaty were exchanged with Colombia January 26, 1917; the work of rectifying the boundary was begun by commissions of the two countries in July. The population in 1910 was estimated at 1,500,000; in 1915, at 2,000,000. It is not unlikely that the latter figure is too high. The proportion of pure white inhabitants is very small; the bulk of the population is Indian, and mestizos are supposed to number about 400,000. Guayaquil, by far the most important seaport, has an estimated population of 80,000 (some estimates are higher, one being 105,000); Quito, about 75,000; Cuenca, about 50,000; Riobamba, 20,000; Ambato, Loja, and Latacunga, about 12,000 each; Ibarra, Bahia de Caraquez, and Puertoviejo, about 10,000 each.

EDUCATION. Elementary instruction is free and nominally compulsory. Primary schools number about 1400, with an enrollment of nearly 100,000. There are 35 secondary schools, besides 9 government higher schools and commercial and technical schools at Guayaquil and Quito. There are three universities—the Central University at Quito, the Azuay University at Cuenca, and the Guayas University at Guayaquil. At Loja is a law school. The state religion is Roman Catholicism.

PRODUCTION. The most important crop commercially is cacao, for which the country has long been famous. Ecuador supplies a large part of the world's supply of cacao, though its proportion is smaller than formerly; the average annual output has not declined, but the production in other tropical countries, as eastern Brazil, the Dominican Republic, and São Thomé, has increased. The Ecuadorian cacao is grown in the coastal regions. Another valuable product is ivory nuts, the fruit of the tagua palm, which grows wild and uncultivated. Other products of some importance are coffee, rubber, sugar cane, grains, vegetables, and tobacco. The raising of cattle, goats, and sheep is a profitable industry, grazing lands being abundant both on the coast and in the interior. Ecuador has large mineral resources, including petroleum, but mining has been only slightly developed. Some gold is produced and exported. The only manufacture of more than local importance is Panama hats, of which large numbers are produced. The finest Panamas come from the provinces of Manabí and Guayas.

COMMERCE. The reported value of imports in 1916 was $9,330,173, and of exports $17,569,691, as compared with $8,408,143 and $12,895,069 in 1915. Import and export values, in thousands of sucres and in the equivalent thousands of dollars, have been as follows (with the sucre at 48.6 cents):

	1912	*1913*	*1914*	*1915*	*1916*
Imports:					
1000 sucres....	21,806	18,182	17,290	17,301	...
1000 dollars...	10,355	8,837	8,403	8,408	9,330
Exports:					
1000 sucres....	28,168	32,488	26,876	26,538	...
1000 dollars...	18,690	15,789	13,062	12,895	17,570

Leading imports in 1914 and 1915 respectively, in thousands of sucres: textile goods other than silk, 4507 and 3687; foodstuffs, 2750 and 2583; hardware, 1574 and 1194; ready-made clothing, 743 and 619; drugs and medicines, 605 and 584; machinery, 762 and 571; wines and liquors, 491 and 420; specie, 621 and 2909.

The principal export values are shown below, in thousands of sucres:

	1912	*1913*	*1914*	*1915*
Cacao	15,716	20,531	20,769	19,988
Panama hats......	2,817	2,341	2,000	1,723
Gold bars, etc.....	619	679	752	1,088
Ivory nuts.........	1,923	4.399	944	1,081
Coffee	1,609	1,717	1,212	952
Cattle hides.......	606	698	480	594
Rubber	1,435	371	185	404

The cacao export in 1913 amounted to 41,894 metric tons, and in 1915 to 37,019 metric tons. In these years respectively, the United States took 10,723 and 15,568 tons; United Kingdom, 2605 and 9353; France, 19,999 and 3694; Netherlands, 929 and 3439; Spain, 2176 and 1982; Denmark, 8 and 1054; Italy, 150 and 1008; Sweden, 0 and 486; Germany, 4305 and 188. Some of these figures show the remarkable effects of the great war on Ecuador's chief export. It may be assumed that a large part of the increased export to the Netherlands, Denmark, and Sweden found its way to Germany. The export of ivory nuts in 1913 amounted to 31,684 metric tons, and in 1915 to 9115 metric tons. In these years respectively, Italy took 2868 and 4490 tons; the United States, 8329 and 3155. The export of cattle hides in 1913 amounted to 1020 metric tons, and in 1915 to 894 metric tons; coffee, 3686 and 952; rubber, 193 and 256. Panama hats to the value of 636,000 sucres were sent to the United States in 1913, and 1,048,000 sucres in 1915.

Imports and exports by principal countries, in thousands of dollars:

	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
United Kingdom....	2,414	3,847	1.231	2,664
United States......	2,771	3,204	3.588	5,678
Italy	389	399	283	598
Spain	365	330	628	582
Peru	299	270	85	129
France	327	246	4.438	1,176
Netherlands	60	172	1.013	981
Germany	1,204	51	860	42
Total, incl. others.	8,403	8,408	13,062	12,895

COMMUNICATIONS. Ecuador has few good roads, and the lack of transportation facilities greatly hinders the country's development. There are in operation about 400 miles (about 650 kilometres) of railway; of this, 297 miles are comprised in the line from Durán (across the Guayas River from Guayaquil) to Quito. In 1917, there was a proposition under discussion to build a railroad from Puerto Bolivar to Cuenca, while by a decision of the Congress of Equador, the municipality of Quito was authorized to grant exclusive concession for thirty years for the construction of an electric railway from the capital to any town or towns of the canton. Guayaquil is one of the chief ports on the west coast of South America. Of Ecuador's total import trade in 1915, the value of 16,012,863 sucres was credited to Guayaquil; of the export trade, 23,175,869 sucres.

The reported length of telegraph line is nearly 4400 miles, with 204 offices. Wireless telegraphy has been installed. Post offices, about 200.

FINANCE. The standard of value is gold. The monetary unit is the sucre; its par value is 48.665 cents, or one-tenth of a pound sterling. The sucre is thus equivalent to the Peruvian sol. The estimated revenue for 1917 was 16,122,450 sucres; estimated expenditure, 16,106,870 sucres. Principal items of estimated revenue, aside from taxes, in 1917: import duties, 6,128,370 sucres; export duties, 3,420,600; stamps, 514,840. The chief disbursements are for administration, defense, public instruction, and service of the debt; interest on the debt, however, after the breaking out of the great war, fell into arrears. Funded debt, as stated for 1916, 39,927,000 sucres; unfunded debt, 8,599,000 sucres; total in American currency, $23,615,000.

GOVERNMENT. Ecuador is a centralized republic, the sixteen provinces into which the country is divided being administered by governors appointed by the national executive. The national legislative power is exercised by a congress of two houses, the Senate and the Chamber of Deputies. Senators (32 in number, 2 from each province) are elected for four years and deputies (48) for two years, all by direct vote. The franchise is held by male citizens who are over 21 years of age and able to read and write. The executive authority is vested in a president, who is elected by direct vote for four years and is ineligible for reëlection until after a lapse of two terms. He is assisted by a cabinet of five members. On March 31, 1912, after an insurrection, Gen. Leonidas Plaza Gutiérrez, commander of the government forces, was elected president, and on August 31 following was inaugurated for the four-year term. General Plaza had been president in 1901-05. In 1916, Alfredo Baquerizo Moreno was elected president and assumed office on September 1 of that year.

EDSALL, SAMUEL COOK. An American Protestant Episcopal bishop, died at Rochester, Minn., February 17, 1917. He was born at Dixon, Ill., in 1860 and was educated at Racine College. At first he studied law and was admitted to the bar, but afterward attended the Western Theological Seminary, being ordained deacon in 1888 and priest in 1889. He then went to Chicago, where he founded St. Peter's Mission and where he remained for a decade. From 1899 to 1901 he was missionary bishop of North Dakota, and after a few months as coadjutor bishop of Minnesota he became bishop in 1901. He published in 1898 *Prayer Book Preparation for Confirmation.* He received honorary degrees from Racine and Illinois Colleges and the Western Theological Seminary.

EDUCATION. See section so entitled in articles on foreign countries and States of the

United States; also EDUCATION IN THE UNITED STATES, and UNIVERSITIES AND COLLEGES.

EDUCATION, AGRICULTURAL. See AGRICULTURAL EDUCATION.

EDUCATION IN THE UNITED STATES. STATISTICS. *Attendance in Elementary and Secondary Schools.* The latest available data for attendance are for the school year ending June 30, 1914. The report of the United States Commissioner of Education shows that there were enrolled in public and private elementary schools 19,561,292 pupils of whom 17,934,982 were in schools under public control. There were 1,218,804 students in public high schools and 154,857 students in private schools of secondary grade. The preparatory departments of higher institutions enrolled 85,738 secondary students. In addition to the numbers just mentioned there were 610,966 students in evening classes, 54,798 in reform schools, 178,063 in business schools, 13,859 in schools for the deaf, 4971 in schools for the blind, 14,940 in schools for the feeble-minded, 32,718 in government Indian schools, 6766 in schools in Alaska, 20,000 in orphan and other benevolent institutions (estimated), 74,725 in private kindergartens, and about 60,000 in miscellaneous schools including those in art and music. The public and private schools of elementary and secondary grade were attended by 22,083,497 individuals of whom nearly 20,000,000 were in public schools.

The total number of days' schooling received by the average child was surprisingly small, being 1127 days for the whole country and varying from 790 days in the Southern Central States to 1360 days in the Western Division.

In the elementary schools about 23 per cent of the children were in the first grade while only 7.63 and 6.36 per cent remained in the seventh and eighth grades respectively. In the high school 40 per cent of the students were in the first year and only 14.27 per cent of the students remained in the fourth year.

Enrollment as Affected by the War. Preliminary statistics obtained by the United States Bureau of Education indicate the effect that the war had on public school enrollment. Reports from 1411 cities and 696 counties showed that there had been an increase in enrollment, but not as great as the normal increase would have been. The enrollment in the elementary schools showed about the normal rate of increase. In the high schools, however, the increase was only about one fourth of what it would have been under normal conditions. Every class except that of the fourth year showed a decrease in the number of boys enrolled. The increase in the number of high school girls was about normal. The increase in enrollment in cities in the elementary schools was above normal, but about ten per cent less than normal in the high schools. In rural schools the enrollment was not equal to normal in either elementary or high schools. The rural high schools, however, had not suffered as large a proportionate loss as had the city high schools.

Cost of Elementary and Secondary Schools. The total cost of the public and private elementary and secondary schools was $684,218,480. The per capita cost was least in the public elementary schools and greatest in the schools for the feeble-minded, being $27.11 in the former and $555.42 in the latter institutions. It appears, therefore that the public was required to pay as much for the care of one feeble-minded child as it paid for the care of twenty normal children. Very few States had made more than a beginning in the caring for the feeble-minded yet the total cost was even then equal to that paid for reform schools or for commercial and business schools.

Elementary and Secondary Schools for Negroes. In the sixteen Southern States, the District of Columbia, and Missouri there were according to the census of 1910 a total of 2,023,108 negro children between the ages of 6 to 14 years. Only 58.1 per cent or 1,175,457 of these children were in school. Private elementary schools cared for 70,564 children, the others being in public elementary schools. There were 24,189 colored secondary students in the Southern States. Of these 11,527 were in private and 8707 in public high schools and 3800 in State or Federal schools of secondary grade.

Cost of Negro Education. The cost of negro education could not be exactly determined because the States did not make separate appropriations for colored schools. Some conception of the relative costs of education for the children of whites and negroes may be gained from the fact that in the Southern States the salaries of teachers were $10.32 for each white child and $2.89 for each colored child who attended public schools.

Teachers in the Public and Private Elementary and Secondary Schools. The number of teachers in the public elementary schools in 1914 was 522,149 of whom 432,534 were women and 89,615 were men. In private elementary schools there were 57,900 teachers of whom 32,862 were women and 25,047 were men. The public high schools employed 47,411 teachers of whom 39,354 were women and 8000 were men. The private high schools had 13,890 teachers of whom 8070 were women and 5820 were men.

CHANGES IN CURRICULUM. During recent years severe criticisms have been directed against the curriculum and methods used in elementary and secondary schools. The charge is made that the ordinary high school arranges its work for the student who will enter college although only one in ten will do so. The elementary school in turn prepares for the high school although only half of the children go through the high school. This work which may be well adapted for those who will attend college is not suitable for those who leave school as soon as the laws of attendance will permit. Cities are meeting this situation by the introduction of industrial and commercial schools or such departments in the regular high schools. These schools or departments aim to fit the student for some particular trade or occupation.

Changes in the elementary school are still in the experimental stage. In general such experiments as are under way are conducted in private schools. There is no accurate list of these schools, but it is certain that the number is large. The most noteworthy of these undertakings is the following.

THE LINCOLN SCHOOL OF TEACHERS COLLEGE. This school is supported by the General Education Board and is under the control of Teachers College of Columbia University. The school is at 646 Park Avenue, New York. It was opened for the first three grades and grades VII, VIII, and IX in September, 1917. The following quotations taken from the announcements of the school serve to indicate its plans and purposes: "The Lincoln School is to be established for the purpose of contributing by experiment to the development of a curriculum adapted to modern conditions. . . . It will endeavor to organize a curriculum which recognizes the varied interests and activities of actual life. The curriculum will include the following subjects: modern languages, civics, history, literature and compositions, the fine arts and music, sciences, mathematics, physical training, household, and industrial arts. Experiments will be made with such languages as English, French, and German to determine what methods give the most substantial and effective results in the use of the languages. History, civics, and the other social studies will be taught so as to contribute to a proper understanding and use of the institutions and organizations of community, city, and State, to the end of developing intelligent attitude and responsibility toward the affairs of civic and social life. Science and the industrial and domestic arts will be prominent throughout the school, with abundant laboratory, shop, home, and field experience as the basis of work. In the subject of mathematics an attempt will be made to develop a course which connects the study of mathematics with its use, adequate provision being made for those whose special abilities or future interests relate to mathematics. . . . In connection with history, civics, literature, and art, an effort will be made to ascertain whether translations of the ancient classics, the records, and other materials of past civilizations cannot be effectively used in presenting the really significant contributions of the past. . . . By means of such subjects and activities the Lincoln School hopes to discover whether an education based upon *realities* is not only consistent with high intellectual, social, spiritual ideals, but whether it is not the most effective way of organizing the pupils' capacities and interests."

CHANGES IN PUBLIC EDUCATION TO MEET WAR NEEDS. In common with other institutions the schools have been greatly affected by the war. The influence of these unusual requirements is manifested in various ways. In the high school and upper grades of the elementary school there has been a strong tendency for boys to drop school and begin service on the farm or in the industries. In some States the enrollment of high school boys has decreased as much as 15 per cent.

A committee of prominent school officials offered the following statement of principles and recommendations to the Council for National Defense:

"In the crisis that confronts us the schools of the Nation should have the single thought to serve their country in the best possible way and to the full extent of their resources, not only in the present emergency but in the years to follow.

"Present conditions demand a statement of the principles which should guide those responsible for the conduct of secondary education.

"We accordingly believe, first, that it is of supreme importance that the educational resources of the nation, and particularly our great public school systems, shall be maintained as fully and completely as possible, in order that our country may not again go through the sad experiences following the Civil War, or of some of the nations of Europe at the present time, and that the supply of trained and educated men and women may not be largely cut off during the war and after its close.

"We believe, second, that it is highly desirable that our schools and colleges shall furnish during the war a continuous supply of men fitted to take positions of leadership in the army, in the industrial world, and in social service, and that to that end students should be encouraged to continue their training up to the point of greatest efficiency rather than to enter service prematurely.

"We believe, third, that the schools should make any changes in their courses of study and methods of instruction that will fit their students to share more effectively in meeting the present crisis and our future needs.

"We believe, fourth, that in all schools special emphasis should be laid on instruction in thrift and in the avoidance of waste.

"I. We recommend that the school year be adjusted in each locality so that the schools may serve as effectively as possible both the children and the community at large under the changed conditions brought about by the war.

"II. To this end we recommend that in the larger cities and wherever else it may be possible to do so to advantage, the schools be kept open for educational and productive effort during the entire year, not only that children who may be called upon during part of the year for industrial service may have opportunity to attend school at such times as they are free, but also that the school equipment and teaching force for manual and industrial training and home economics may be available for the instruction of adults.

"III. We recommend that in agricultural sections the sessions of secondary schools be so fixed as to permit boys and girls to assist in agricultural operations with the least possible interruption of educational work. In the Northern States, where the crop-growing period is short, the summer vacation may be lengthened to include the periods of cultivation and harvesting of food crops. To compensate in part for this extension of the summer vacation, the holiday periods occurring during the school year may be shortened or eliminated. In those parts of the country where planting season begins early and the harvest season ends late, high schools may adjust vacations to coincide with the periods in which extra labor is demanded on the farms. In such cases the full amount of school work may be secured through mid-summer sessions or as suggested in Recommendation V.

"IV. We recommend that every effort be made to employ teachers of agriculture and home economics for the full year, and that their time during the summer months, and such other time as is not needed in school instruction, shall be utilized in supervising productive work of the boys and girls on the farm and in the home.

"V. We recommend that school officers take cognizance of the temptation to leave school which will be presented by the offer of high wages in the industrial pursuits. This temptation may in a measure be offset and the children kept under instruction by the organization of the schools wherever feasible on the part-time basis, as in Fitchburg, Cincinnati, and Spartanburg.

"VI. We recommend that boys attending secondary schools be advised not to enlist for military or naval service at present or in the immediate future, because the needs of the country will be better served by the assurance of an adequate supply of trained young men in the latter stages of the war and in the industrial reconstruction which must necessarily follow its close."

Lessons in Community and National Life. President Wilson addressed a letter to school officers in which he urged "that teachers and other school officers increase materially the time and attention devoted to instruction bearing directly on the problems of community and national life." He stated that this was "a plea for a realization in public education of the new emphasis which the war has given to the ideals of democracy and the broad conception of national life." Mr. Hoover and Commissioner Claxton caused to be prepared and distributed suitable lessons in community and national life for the elementary grades and for the high school classes. These lessons were in very general use throughout the country. It is significant that this was the first time in our history that the youth of the entire United States studied the same lessons.

Educational Legislation. In each State where the legislature met in 1917 laws were enacted to provide for vocational education in accordance with the Federal vocational education act. It was required of the legislature to accept the provisions of the Federal act, to provide a State board for the administration of vocational education, and to designate the State treasurer as the custodian of funds.

The most important school legislation affecting any one State was in New York. It was said of this law that "it organizes for a State a mass of legislation which would fill a tangled volume, reducing it to order and system." This law changes the unit of administration from the school district to the township. One board of seven members elected by the town has entire direction of all the schools of the town. The gross inequalities of the district system are avoided.

The new law gives to the cities a greater measure of home rule in school matters. In New York City a board of seven members appointed by the mayor takes the place of the large board that previously existed. The law makes the city superintendent the manager of the school system. The reorganization of the New York City schools is in accord with the recommendations of the Committee on School Inquiry supported during 1911-12 by the Board of Estimate and Apportionment.

Foreign Languages in the Elementary Schools. Since the declaration of war there has been much discussion regarding the teaching of foreign languages in the public elementary schools. In several cities where the German population was large German had been taught in all of the elementary grades. Among cities of 25,000 population or over, nineteen reported that some foreign language was taught below the seventh grade. In all but three of these cities German was the chief language taught.

There was a strong tendency to drop the study of German from both the elementary and high schools, and to confine the instruction in all foreign languages to the grades above the sixth school year. The United States Bureau of Education gave the following suggested policy for the teaching of foreign languages in the public schools:

"There is general agreement among educators and public men, both in this country and abroad, that there should be no interference with the existing high school and college provision for the teaching of German; that a knowledge of the German language is more important now than it was before the war. The upper elementary, especially where organized as junior high schools, may quite properly offer foreign languages, including German, but educators generally look upon the teaching of foreign languages in the lower elementary grades as of very questionable value."

Military Training in the Public Schools. *The New Jersey Commission on Military Training in High Schools.* The report of this commission was submitted to the governor on February 5, 1917. In general the conclusions were against the adoptions of military training in the high schools of New Jersey. Among the reasons assigned for this position were the following:

"There is no good reason for selecting high school pupils for purposes of military training. If any boys must be trained, all boys of the required age and strength should receive training.

"Compulsory military training in high schools will cause pupils who desire to evade it to leave school, and will thus serve to counteract all the agencies which tend to prolong school life.

"Military training in high schools has been proposed, not because it is wise, but because it is easy to use the machinery of the school system for the purpose.

"Boys of high school age can not successfully take up the strenuous work of real military training.

"Military drill is not advisable as a means of physical training. Thorough courses in physical training are better as giving a mental training for military service, and are surely necessary for all."

Committee on Military Training of the Department of Superintendence. The report of this committee was submitted to the superintendents during the early part of 1917. The more important of its conclusions and recommendations are summarized as follows:

The committee favored and recommended the adoption of a plan of intensive and specific military training for young men of nineteen years of age and over to be conducted during the twentieth and twenty-first years.

The committee opposed the introduction of military training and military drill, or any form of instruction which is distinctly or specifically military, into the elementary or secondary schools.

A thorough and comprehensive plan of physical training should be provided and made compulsory upon all boys and girls of all ages attending the schools.

Special attention should be directed to personal hygiene.

Provision should be made for instruction in sanitation and safety precautions for the purpose of guarding against disease and injury. For this purpose voluntary camp life during vacation should be encouraged, as well as outdoor exercises and hikes into the country.

Negro Education. During the summer of 1917 the United States Bureau of Education with the coöperation of the Phelps-Stokes Fund published a two-volume report on negro education. The report shows that "public schools for negroes have shared comparatively little in the educational advance that has taken place in the Southern States during the past fifteen years." Many of the school buildings were found to be unfit for school purposes. Failure to enroll and irregularity of attendance of colored children result in 30 per cent of the colored population being illiterate while a very large proportion of those who do attend do not complete the elementary grades until they are seventeen or eighteen years of age. The limited financial resources for the conduct of the negro schools are not sufficient to employ capable teachers. Nearly 70 per cent of the teachers of the colored schools in the South have had less than six grades of elementary education. The report asserts that the majority of the teachers are utterly incompetent of any responsibility.

The report summarizes the facts in regard to secondary education in the following conclusions:

> "1. That the secondary schools are so few in number and so poorly equipped that they supply but a small fraction of the teachers required by the elementary schools for colored people.
>
> 2. That the inadequacy of the elementary school system is such that the number of pupils prepared to study secondary subjects is not sufficient to use the secondary facilities, even of the private schools.
>
> 3. That much of the secondary work done in the private schools is not planned to prepare teachers for the elementary schools nor adapted to the needs of the majority of the pupils.
>
> 4. That a small number of the institutions for colored pupils have been among the pioneers in putting into effect the progressive ideals and methods that are now reorganizing American secondary education."

Each known public and private school for negroes is described and recommendations regarding the giving or withholding of contributions are offered. The present needs and recent movements in negro education are summarized as follows:

> "1. That there is a pressing need for increased public school facilities for negroes. With increased public facilities, it is exceedingly desirable that the State departments of education invite the coöperation of all private institutions in the work of educating the negro. Initiative in this coöperation naturally rests with the State.
>
> "2. That the aid of philanthropy be continued with the present liberality until the South has attained to a better economic condition. The effectiveness of this aid will be increased in proportion to the coöperation developed with public school authorities.
>
> "3. That all education shall stress, first, the development of character, including the simple but fundamental virtues of cleanliness, order, perseverance, and the qualities essential to the home, and, second, adaptation to the needs of the pupil and the community. This adaptation requires a leadership that has some grasp of the great historic movements of civilization. Only such a leadership for both the white and the black people can interpret the groups to each other.
>
> "4. That supervision of both public and private educational efforts shall be increased, so that all agencies may be correlated with each other, sound business methods established, organization of work suited to income and plant, and building operations conducted with economy and good taste."

Vocational Education. The 64th Congress enacted a law to provide for the promotion of vocational education. This was approved by the president on February 23, 1917. The law provides for a Federal Board of Vocational Education to consist of the secretary of agriculture, secretary of commerce, secretary of labor, United States commissioner of education, and three citizens of the United States to be appointed by the president by and with the consent of the Senate. One of the appointed members must be a representative of the manufacturing and commercial interests, one a representative of the agricultural interests, and one a representative of labor. As a representative of the manufacturing and commercial interests the president appointed James P. Monroe, as representative of the agricultural interests Charles A. Greathouse, and as representative of labor Arthur E. Holder. The Federal Board appointed Dr. Charles A. Prosser, president of Dunwoody Institute, as director.

The law provides a scheme of coöperation between the Federal government and the States for the promotion of vocational education in the fields of agriculture, trade, home economics, and industry and in the training of teachers in these subjects. The legislature of each State wishing to participate in the distribution of Federal funds must accept the provisions of the act and create a State board for vocational education. The State board is required to submit to the Federal board an outline of methods by which it proposes to conduct its vocational educational activities. If these are in conformity with the spirit and purpose of the act the Federal board authorizes the apportionment of money to that State. Prior to January 1, 1918, all but one or two of the States had accepted the provisions of the Federal Act. The total grant by the Federal government increases from $1,860,000 in 1917-18 to $7,367,000 in 1925-26. These appropriations must be matched dollar for dollar by the States and can be used only for payment of salaries and for the maintenance of teacher training. The apportionment for agricultural education is allotted to the States in the proportion which their rural population bears to the total rural population in the United States. The appropriations for paying the salaries of teachers of trade, home economics, and industrial subjects are allotted to the States in the proportion which their urban population bears to the total urban population of the United States. The appropriation for the training of teachers in vocational subjects is allotted to the States in the proportion which their population bears to the total population of the United States. In no case are the appropriations to be less than $5000 each. By 1925 the minimum allotment to each State will be $10,000, for each of the purposes specified. The State of New York has a total appropriation of $154,210. This is the largest amount for any one State. Pennsylvania, with $30,744.79, has the largest appropriation for agricultural education.

Training of Conscripted Men. The War Department authorized the Federal board for Vocational Education to undertake schemes of training for conscripted men within the cities and schools coöperating with that board. This work is to be carried on in evening classes for conscripted men fitting them in part at home for army work. Such schools are known as "ground-work schools." The Federal board for Vocational Education supplies to the different State boards the statements of the needs in the different trades represented and an outline or syllabus of courses that are to be given. The expenses of such courses are borne in part by the Federal Board for Vocational Education and in part by the State or city in which the courses are given. It is proposed to receive into such classes only those conscripted men who are in classes one and two and to leave such men as begin this work in their homes until they have satisfactorily completed the course. Industrial plants, as well as school laboratories, are utilized for the purpose of instruction.

EGYPT. A khedivate of northeastern Africa, virtually under the control of Great Britain and nominally under Turkish suzerainty until 1914, when it became a British protectorate. Cairo is the capital.

AREA AND POPULATION. Egypt proper includes the Libyan Desert, the territory between the Nile and the Red Sea, and the Sinai Peninsula; and is divided for administrative purposes into Upper and Lower Egypt. The area, exclusive of the Sudan, is given as 363,181 square miles, of which only 12,013 square miles are settled and under cultivation. The population in 1907 numbered 11,189,978, not including nomadic Bedouins, estimated to number over 97,000. By nationalities the population was made up as follows: 10,903,677 (10,366,046 sedentary, 537,631 nomadic) Egyptians, and 286,381 foreigners, of whom 69,725 Turks, 62,973 Greeks, 34,926 Italians, 20,853 British including Maltese, 14,591 French including Tunisians, 7704 Austrians and Hungarians, 2410 Russians, etc. Mohammedans numbered 10,366,826; Copts, 706,322; Jews, 38,635. Population (provisional figures) according to the census of March 6, 1917, 12,566,000.

In 1916 Cairo had 740,000 inhabitants; Alexandria, 405,882; Tanta, 58,957; Port Said, 61,380; Mehala el Kobra, 38,020; Mansura, 45,294; Assiut, 43,731; Damanhur, 46,555; Fayum, 41,606; Zagazig, 39,001; Damietta, 36,643; Minieh, 30,246; Akhmim, 26,966; Beni-Suef, 30,827; Menuf, 25,290; Shebin el Kom, 26,347; Mellawi, 22,947; Qena, 21,509.

EDUCATION. Primary education is conducted in maktabs, or elementary vernacular schools, some of which are under native management and some under the control of the ministry of education. Native education is completed at the Azhar University at Cairo, the principal university of the Mohammedan world. There are also government secondary, special, and technical schools, and professional colleges of law, medicine, education, and engineering. A national university, under entirely Egyptian management, has been founded at Cairo.

AGRICULTURE. Nearly all of Egypt's national wealth is derived from the growing and marketing of cotton. As a result of war conditions the price of Egyptian cotton reached a higher point during 1916 than has been known since the American Civil War. Egyptian cotton doubled in price during a period of several months in the fall of the year.

The internal commercial conditions of Egypt continued to prosper as a result of the war. In his note on the budget for 1917 the acting financial adviser stated that the public revenues have benefited to an unhoped-for extent as the result of the improvement in general economic conditions.

The cultivated areas of Egypt depend for their water supply on the extended irrigation and drainage system, which has as its base the large dam across the Nile at Assuan. The cotton season is reckoned from September 1 to August 1. Deliveries for the 1915-16 season totaled 4,806,331 cantars (1 cantar = 99.049 pounds). This was about 55,000 cantars short of the estimate. The area under cotton cultivation was computed to aggregate 1,655,000 feddans (1 feddan = 1.03 acres), about 469,000 feddans more and some 120,000 less than the estimate for 1915 and 1914, respectively. Owing to unfavorable weather during the early flowering period of the plant, the ravages of the pink bollworm, and other parasites, the unit of yield per acre was 0.50 less than the average for the preceding 10 years. The area planted to cotton in 1910 was stated at 1,642,610 feddans, and in 1911 to 1,711,228—an increase of 68,618 feddans. Production, in 1911, of cleaned cotton, 3,318,529 metric quintals.

It has long been the custom in Egypt to devote acreage to cotton at the expense of the cultivation of needed breadstuffs, the deficiency having been supplied through importation of flour and cereals. Foreseeing the restricted supply of these staples in the world's markets as the result of the war a compulsory planting of cereals was imposed in 1915, and again on reduced scale during 1916.

As the results of these measures Egypt's needs of breadstuffs is believed to be assured for several years to come. Notwithstanding these precautions the average wholesale price of commodities produced in the country were fully 32 per cent higher than those of 1914.

The table below shows area (in hectares) and yield (in quintals) of staple products for 1917 (provisional) and 1916 (final):

	Hectares		*Quintals*	
	1917	*1916*	*1917*	*1916*
Wheat ..	451,833	585,669	8,119,687	9,945,520
Barley ..	180,007	177,595	2,960,714	2,609,910
Corn	702,010	748,815	18,733,613*	19,941,088
Rice	107,832	60,831	3,476,057*	2,586,868
Cotton ..	704,604	695,447	3,034,504*	2,704,847

* Five-year average, 1911-15.

The area under sugar cane in 1915 was 21,921 hectares, or 108.2 per cent of the area in 1914, which amounted to 20,252 hectares and gave a production of 9,248,429 metric quintals of cane. The amount of sugar cane treated in 1913 was 741,000 tons, as compared with 537,000 in 1912.

A live stock table follows, for comparative years:

	1916	*1915*	*Difference*
Cattle	492,650	553,632	— 60,982
Buffaloes	515,121	538,109	— 22,988
Horses	34,403	35,015	— 612
Asses	526,181	546,707	— 20,526
Mules	17,266	21,611	— 4,345
Sheep	687,696	755,421	— 67,725
Goats	263,200	290,218	— 27,018
Pigs	8,580	7,259	+ 1,321
Camels	94,911	109,049	— 14,138

COMMERCE. In the following table are given imports and exports of merchandise in thousands of pounds Egyptian:

	1910	*1912*	*1913*	*1914*	*1916*
Imports ..	23,553	25,908	27,865	21,725	30,854
Exports ..	28,944	34,574	31,662	24,092	37,462

A table of principal articles of trade, values in thousands of pounds Egyptian for 1916, follows:

Imports		*Exports*	
Textiles	9,644	Textiles	30,098
Fuel	5,738	Cereals, etc......	4,467
Spirits, etc......	2,841	Metals, etc......	198
Cereals, etc......	1,460	Animal prods....	685
Drugs, etc.......	1,418	Tobacco	262
Chem. prods.....	1,255	Drugs	680
Animals, etc.....	2,164	Skins, etc.......	419

Trade with the principal countries of origin and destination is shown in the following table in thousands of pounds Egyptian (£E = $4.943):

Imports:	*1910*	*1912*	*1913*	*1914*	*1916*
United Kingdom	7,311	7,991	8,496	7,061	15,070
British pos.*...	169	253	207	192	367
British pos.†...	967	1,314	1,762	1,277	3,511
France ‡	2,703	2,411	2,513	1,640	1,358
Turkey	2,905	2,754	2,724	1,911	74
Austria-Hungary	1,647	1,680	1,941	1,127	6
Germany	1,262	1,421	1,609	1,375	94
Italy	1,169	1,243	1,473	1,450	2,482
Exports:					
United Kingdom.	14,343	16,022	13,648	10,450	19,931
British pos.*...	10	14	13	66	802
British pos.†...	82	118	103	168	201
France ‡	2,480	2,707	2,787	1,571	2,621
Austria-Hungary	1,435	1,431	1,757	960	...
Germany	3,088	3,886	4,066	2,299	...
United States...	1,892	4,121	2,485	2,917	6,918
Russia	1,659	2,056	2,242	1,600	1,868

* British possessions in the Mediterranean.
† British possessions in the Far East.
‡ Including Algeria.

Although Egypt's need and ability to purchase in foreign markets was perhaps greater during 1916 than at any time during recent years its requirements could not be fully supplied, owing to the many restrictions placed on exportations by European countries and the United States, and to the lack of transportation facilities.

Imports from Spain show an actual increase in quantities over 1915. Imports from Greece decreased in both quantity and value owing to the unsettled conditions in that country. Egypt is an easily accessible market for Greece, and its business in tobacco, fresh edible stuffs, etc., is considerable in normal times. Imports attributed to Germany, Austria, and Turkey are parts of prize cargoes captured during the first year of the war and sold under orders of the local British Prize Court during 1916. Japan has begun to supply many manufactured articles formerly imported from Germany and Austria. The Director General of Posts, in his report for the year 1916, states: A novel feature was the arrival of 27,168 parcels from Japan, as compared with 877 in 1915. Although imports into Egypt from the United States during 1916 show an increase in value, there was a decrease in actual quantities.

The exports of greatest value were cotton and cotton-seed. In 1915, 1,379,426 bales of cotton (1 bale equaling 500 pounds), valued at $95,536,764, were exported, as compared with 1,083,387 bales worth $148,770,273, in 1916; shipments of cotton seed for the same periods were 16,597,056 bushels, worth $11,734,904, and 9,819,468 bushels, valued at $9,475,296.

An unusual feature of the exports during 1916 was the increase in refined sugar. While Egypt has always exported a certain quantity of refined sugar, the product of a monopolistic concession made from locally grown cane and imported East Indian brown sugar, it was not until the last months of 1914 that the quantities began to assume interesting proportions. Custom statistics show that the average annual exports of refined sugar from Egypt for the years 1909-13 were valued at $604,370; while the shipments for 1914 were $1,146,258; for 1915, $2,862,314; and for 1916, $3,196,794. Italy and France are the countries that have taken the increased exports of sugar, the augmented markets for Egyptian sugar having been created through the cutting off of other sources of supply.

There was no change during 1916 in the conditions that militate against an unhampered extension of the market for American manufactures in Egypt. The lack of proper steamship connection was still the paramount obstacle. Given sufficient freight facilities, the United States might have supplied to a very large extent the needs of Egypt for 1916 in many lines.

The declared value of the exports to the United States from all of Egypt during 1916 amounted to $29,226,289, against $25,674,723 for 1915, the increased values being due entirely to augmented prices. With the exception of ivory and cigarettes, exports show a decrease in quantities.

The exports of raw cotton from Egypt to the United States during 1916 as shown in the declared export returns represent invoice values f.o.b. Alexandria at actual price received under the contract made from three to six months before date of shipment; such values aggregated $27,968,063. Egyptian customs statistics for these same exports show a value of $33,985,982. The difference is explained by the fact that for the purpose of customs valuation the price of cotton exported during any current month is based on the average daily price at Alexandria for the preceding month and does not take into consideration the actual sale price.

Returns of the maritime movement in Egyptian ports and the Suez Canal for 1916 reflect the greatly disturbed conditions of ocean traffic. The tonnage arriving at Alexandria and Port Said during 1916 was fully 76 per cent less than during 1914. Suez Canal returns for 1916 show tonnage amounting to 7,274,627 as passing through the canal, a falling off of over 40 per cent from the traffic during 1914.

COMMUNICATIONS. There were 2076 miles of state railway in operation March 31, 1916. In addition there were 840 miles of light railways—the Egyptian Delta Light Railways, the Chemins de Fer de la Basse-Egypte, and the Fayum Light Railway. There is also the Sudan military railway to Khartum, 375 miles long.

FINANCE. The budget for 1916-17 was estimated to balance at £E16,630,000. Revenue and expenditure for three years are shown in the table below:

	1913	*1914-15*	*1915-16*
Revenue ..	£E17,368,616	£E15,390,918	£E17,759,418
Expend. ..	15,728,785	16,857,783	16,594,666

The total outstanding debt January 1, 1916, amounted to £ (sterling) 93,903,240, and the annual charge for interest and sinking fund to £E4,604,061.

GOVERNMENT. Ahmud Fuad, with the revived title Sultan of Egypt, is the reigning monarch. High commissioner for Egypt, Sir Reginald Wingate.

By firman of February 13, 1841, the office of vali, or governor, was made hereditary in the person of Mohammed Ali (1805-48) under the title khedive, subsequent rulers being Ibrahim (1848), Abbas I (1848-54), Said (1854-63), Ismail (1863-79), Tewfik (1879-92), Abbas (II) Hilmi (1892-1914). There is a council of ministers appointed by the sultan with a president who acts as prime minister. The various ministers prepare drafts of administrative decrees, which are submitted to the council. When approved and signed by the sultan these decrees become law. The British Financial Advisor attends the meetings of the council, but has no vote. There is a legislative council of thirty-nine members and a general assembly consisting of the Legislative Council, the Council of Ministers, and forty-six members elected by the people. These bodies are mainly consultative, the legislative power resting with the sultan and his ministers. See Archæology.

The Sultan Hussein Kemal died on October 9. He was one of the sons of the Khedive Ismail; born in 1854. He passed his early life in France at the court of Napoleon III, and later, returning to Egypt, became minister of finance and minister of war, but after 1882 he retired from political life. On December 19, 1914, he was chosen by the British Government to succeed the deposed Khedive Abbas Hilmi and was thus the first khedive to govern under a British protectorate. His successor was Prince Ahmed Fuad, his brother. The new khedive was born in 1868, educated at Turin where one of his comrades was the King of Italy—Victor Emmanuel. He had had no part in public life. His sympathy was for the Italians and he surrounded himself with Italian officials. He was popular in Italy and had been chosen as the Italian candidate for the throne of Albania, which was finally bestowed upon the Prince of Wied. Before his accession he had lived quietly and had been chiefly interested in science and letters. He was president of the geographical society of Egypt and of the Egyptian University. He made his official entry into the Abdin Palace on October 11.

EL DORADOITE. See Mineralogy.

ELEANORE, Queen of Bulgaria. Queen Eleanore, the second wife of King Ferdinand of Bulgaria, died at Sofia on September 12, 1917. She was the Princess Eleanore Caroline Gasparine Louise, daughter of Prince Henry IV, of a younger branch of the Reuss-Kostriz house of Reuss, a small German state, where she was born fifty-seven years ago. She was married to King Ferdinand in 1908. She was known as the Royal Nurse of Europe on account of having cared for wounded soldiers in the hospitals during the Russo-Japanese and Balkan wars. In the spring of 1914 she planned to make a tour of the United States in order to let the American people know how the Bulgarian people suffered during the Balkan wars. The proceeds of the tour were to help alleviate the suffering. The unrest of that year, however, caused the postponement until October, 1914. The outbreak of the great European conflagration caused the abandonment of the scheme.

ELECTORAL REFORM. Although nearly all the State legislatures were in session in 1917, few of them passed important measures relating to electoral reform, and those which were enacted related for the most part to the question of woman suffrage, or the voting of citizens absent from the State in the government service.

The legislatures of North Dakota, Indiana, and South Dakota proposed constitutional amendments granting suffrage to women conditioned upon a referendum. The Connecticut and Iowa legislatures referred similar amendments to the next session of the legislature. Ohio, Michigan, and Rhode Island extended to women the right to vote for presidential electors, and Indiana and Nebraska extended this right to all officers not specified in their constitutions. In Vermont, women tax payers over 21 were granted the right to vote in town meetings. The Kansas Legislature proposed a constitutional amendment to deprive aliens who have declared their intention of becoming citizens of the right to suffrage.

The legislatures of Illinois, Nebraska, Minnesota, Missouri, and Wisconsin passed measures providing for the obtaining of the ballots of men absent on military and naval service. Eleven States provided for the voting of all those who may be absent from their home precinct, in either general or primary elections. The Wisconsin Legislature extended the absent voting law to all who are sick or physically disabled and so unable to attend the polls. A similar measure was passed by the legislature of Indiana. In Missouri additional provision was made for the voting of traveling salesmen at primary elections.

Presidential Primary Acts formerly passed were repealed by the legislatures of Minnesota, Iowa, and Michigan. In Tennessee, a compulsory system of party primary elections was provided for. In New Jersey, the nominations for public officers, with the exception of candidates for presidential electors, was forbidden save by convention. In South Dakota, there was initiated the unique primary law for submission to the people. This provided for party campaign pamphlets to be printed by the State. Presidential candidates and candidates for the governorship within the party must appear in one and sixteen joint debates respectively, in the State or cease to be candidates for their party. Party electors may propose independent candidates. By petition, the independent candidate may further file a "paramount issue" of eight words or less with the secretary of state. This issue will appear on the ballot and the independent candidate must challenge the representative candidate to joint debate on this issue. A jury of his party may recall an elected candidate when he fails to observe the principles on which he was elected, or is guilty of misconduct.

The legislatures of Illinois and Missouri forbade the printing of anonymous campaign matter. In Massachusetts it is required that a candidate nominated by some one other than a political party may not use the name of the party in his political designation. In Nebraska candidates are prohibited from running for nomination in the same office on two party tickets, and from accepting the minority nomination if he loses that of the majority party, unless his minority party votes exceed his majority party votes. In Illinois, candidates are prohibited from pledging themselves in return for support on penalty of fine or imprisonment and forfeiture of office.

The Nebraska legislature enacted a novel law for eliminating presidential electors from the ballots. The governor is required to appoint, as presidential electors of the State, those electors nominated by the party whose candidate for the president and vice-president—the name appearing on the ballot—receive the highest number of votes. In Nevada, Nebraska, and Wyoming, non-partisan ballots are required for the election of judges and certain school officials. In Oregon, primary ballots must be printed with the name of the candidates in as many different rotations as there are candidates, thus placing each name at the top of the list on practically an equal number of ballots. In West Virginia and Nebraska double election laws were created, one to receive and one to count the ballots. The Illinois Legislature created a non-partisan commission to revise the election laws.

ELECTRICAL INDUSTRIES. The growth of electrical industries in the United States in 1917 was notable not only on account of the actual increase in the amount of business done, but also in the changes produced by the war in particular lines. Central stations were called upon for a great increase in the production of energy for lighting purposes on account of the large number of factories that were operating on night shifts. The difficulty in procuring new machine tools and in fact all kinds of machinery for new factories and munition plants made it necessary in almost every instance to operate these establishments continually. While calling upon the central stations for larger output during the usual evening hours that constitute the time of maximum demand in the shape of a lighting load, this necessitated the use of electricity during the latter part of every night and thus had the advantage of maintaining the load factor at a more uniform point. The industry in general, particularly towards the close of the year, was seriously hampered by the shortage of fuel existing at many points, rendering it necessary in some cases for central stations to curtail their operations in order to conserve the coal supply.

The application of electric power for welding processes in machine shops and factories increased to a notable degree. The introduction of heating and cooking devices for domestic use was also a marked feature of the year. Systematic publicity campaigns were widely carried out but in many cases with results depending largely upon the prevailing prices for energy. It was reported that at the end of the year there were more than 14,000 electric ranges in use. The opinion prevailed, however, that where the charge for energy was higher than five cents per kilowatt hour there was no advantage in the use of the electric range as compared with that heated by gas or coal.

A well known authority whose figures have always been regarded as conservative estimated that the gross earnings of the various branches of electricity in the United States during the year 1917 would total nearly $3,000,000,000 as shown by the following table:

ELECTRICAL INDUSTRIES IN THE UNITED STATES—1917

Central stations	$550,000,000
Electric traction	800,000,000
Telephony	425,000,000
Telegraphy	175,000,000
Isolated plants	150,000,000
Electrical manufacturing	600,000,000
Miscellaneous	125,000,000
Total	$2.825,000,000

ELECTRIC LIGHTING. Electric lighting during 1917 was characterized by development in special directions. As referred to in the 1916 YEAR BOOK considerable progress had been made during that year in the application of scientific principles of illumination of city streets. This progress was maintained during a part of 1917, but towards the end of the year the necessity for coal saving was so urgent that not only were many plans for improved street lighting temporarily held back, but those systems that were already in existence were utilized at not much more than half their full capacity for this class of illumination. As had been the case in the preceding year the gas filled tungsten lamp was rapidly replacing even the best forms of arc lamps for street illumination. One of the most notable ways in which improved lighting was utilized was in the protection of factories, munition plants, and public structures of all kinds. Even early in the year, before the United States formally entered the war, many munition plants, as well as central stations and other public utilities, began applying systems of flood lighting in order to render approach by spies or other ill-disposed person to their plants difficult. The results achieved were so satisfactory that the manufacturers of electric lighting apparatus of all kinds were kept busier than ever before to supply the demand for protective flood lighting apparatus. By means of reflectors properly placed it was possible to illuminate a given area so clearly that any unusual happening or an attempt at approach to the building, bridge, or dock should be instantly detected by the guards who had charge of the same. For moving picture purposes there were new styles of tungsten lamps developed for use where the area of the screen was small and the projecting apparatus could be placed reasonably near the same as would be the case in large rooms and small lecture halls. A mazda lamp having a special design filament was brought out for this purpose, the lamp using four flattened coils instead of the usual tungsten filament and being filled with an inert gas, preferably nitrogen. Their energy consumption was approximately 600 watts at 30 volts and its effects aided by a spherical mirror at back and a powerful condensing lens at the front were entirely satisfactory. For the measurement of illumination a portable instrument called the foot-candle metre was brought out and widely used owing to the fact that it lent itself to the direct reading of brightness not only by an expert but by any person of ordinary intelligence. The instrument was constructed with a scale marked directly in foot-candles along which was a series of small discs which by suitably changing the voltage of a test lamp supplied with the instrument could be brought to the same degree of illumination as that furnished by the source whose intensity was to be measured.

ELECTRIC POWER, TRANSMISSION OF. Owing to the war there were no new undertakings in the construction of transmission lines for electric power; nor was there any change proposed in the maximum voltage used on such lines. The amount of business supplied by the various central stations feeding long distance lines was, of course, increasing and many of them were loaded practically to their capacity. As an instance of this it was suggested that the legislature of the State of New York take steps to authorize the utilization of an additional amount of power from the Niagara River at Niagara Falls in order to increase the capacity of existing electro-chemical manufacturing plants at that point whose operation was so vital to the successful prosecution of the war. At the close of the year, however, it was very doubtful whether this plan would be carried out as the interests that formerly opposed any further commercial utilization of the falls were still exceedingly active in their opposition to the scheme on account of the unavoidable destruction of the scenic beauty of the place. In another direction, however, manufacturers were enjoying the advantages of a closer inter-connection, or, as it is called in England "interlinkage" of various electric power systems. By the installation of switching stations equipped with modern high capacity apparatus it was possible to supply power from any steam or hydro-electric station to almost any part of the system connected in a network of this kind, their lines in some instances extending for many hundreds of miles. In New York State, as well as in California, this interconnection of electric power systems was carried out on an extensive scale, rather more so than in any other part of the United States, rendering it possible to carry on operations at manufacturing plants with electric power derived from distant hydro-electric plants when owing to the coal shortage the nearest central station to the plant referred to was unable to furnish energy at more than a small fraction of its capacity.

There was an increase in the amount of "outdoor" apparatus installed for switching and other purposes on high tension transmission lines, and the design of such outfits was brought to comparatively simple standards. Transformers, switches, and similar equipment were quite commonly placed outside of sub-station buildings irrespective of the climate of that particular locality, the manufacturers having made it possible to guarantee the performance of these devices under all conditions of weather.

There was some further increase noted in the use of large synchronous machines as condensers on long distance lines. Under the war conditions prevailing it was difficult, and in many cases impossible, for manufacturers to supply generators or motors for any large undertakings outside of those devoted to government work. And the same state of affairs existed in regard to wire, cables, and insulators, the major part of which product was practically absorbed by government orders early in the year. In this connection also, while but few details were given out for publication, it was generally understood that a large amount of generating and transmission apparatus was manufactured and sent to France for use in the districts occupied by the Allied armies for the numerous purposes of power generation and transmission so indispensable to the fighting forces.

In connection with the distribution of electric energy by central stations, the experience of the year 1917 showed conclusively the need of further development of the natural resources of the United States in shape of water powers. It was estimated that the still undeveloped water powers amounted to about 50,000,000 horsepower and that by a more liberal policy on the part of the government this could be brought into use for public purposes by a more encouraging attitude towards industries and power plant owners. The decision of the matter was at the close of the year still in a very uncertain state and there was but little hope that the attention of Congress could be sufficiently attracted to produce very tangible results during the ensuing year.

ELECTRIC RAILWAYS. Electric railway development during the year measured by new mileage was very slight. Near Philadelphia the Pennsylvania railroad was proceeding with the electrification of its suburban line from Philadelphia to Chestnut Hill, Pa., though this was not completed at the end of the year. The most pronounced feature of electrification of steam railways was the general satisfaction of operating officials with the service furnished by electric locomotives hauling both passenger and freight trains.

The electrical equipment of the Chicago, Milwaukee, and St. Paul Railroad had been in use a sufficiently long time to demonstrate its capabilities under all conditions of weather and with all kinds of traffic. While it was said at first that the men who had been running steam locomotives were somewhat unwilling to be instructed in the operation of electric locomotives, it was found that after a surprisingly short time under the supervision of competent instructors, these men were loudest in their praise of the electric locomotives.

The electric engine demonstrated its ability in the coldest weather to pull its maximum load so that there was never any necessity, as had always been the case with steam locomotives for diminishing the tonnage of freight trains over the steep grades of the mountains traversed by the St. Paul Railway.

On the Norfolk and Western Railway, the alternating current three phase locomotives that had given such excellent satisfaction in hauling coal trains from their first application on this line continued the good work and were increased by the addition of several more.

The Pennsylvania Railroad built during the year a locomotive designed for high speed freight service. It resembled those in use on the Norfolk and Western in that it was composed of two units, and each unit of the Pennsylvania engine was mounted upon three driving axles which were driven by alternating current motors deriving their energy from an overhead trolley wire at 11,000 volts. Owing to the comparatively short line equipped with this system on the Pennsylvania road, there was not much opportunity to test this locomotive in actual freight service, but it was found to be capable of developing 7000 horsepower for one hour and 4000 horsepower continually, thus making it the largest and most powerful electric locomotive in the world. The satisfactory operation of electric locomotives for trunk line railroads demonstrated further the vast possibilities in the further developments of water power. A writer in one of the technical journals estimated that the steam locomotives of the United States consumed about one-quarter of all the coal produced in the United States and developed 50,000,000 horsepower. This is about the amount of energy that has been estimated to be still capable of development in this country. Based upon figures of our average coal production it can be shown that complete electrification of all the railways in the United States would conserve 150,000,000 tons of coal.

In spite of the war conditions existing, a number of the English railways were considering the adoption of electric power as soon as the war should end, and although electrification had made but limited headway in that country during the last few years, the experience with it had been so uniformly satisfactory that the decision of the English managers was not at all surprising. Plans looking to the same end were also under way in France, Switzerland, and Italy. Even during the existence of war there was a further application of electric power during the year to the line of the St. Gothard Railway running through Switzerland and northern Italy.

ELECTRO-CHEMICAL SOCIETY, AMERICAN. See CHEMISTRY, INDUSTRIAL.

ELEMENTARY SCHOOLS. See EDUCATION IN THE UNITED STATES.

ELEVATORS, GRAIN. During 1917, there was completed for the Chicago and North Western Railway a large reënforced concrete grain elevator on the Calumet River in South Chicago, designed to have an ultimate capacity of 10,000,000 bushels. It was of fireproof construction and included a freight yard for 1250 cars and an engine terminal. The plant included a working house, a river house, storage tanks, and other auxiliary facilities. The working house was 235 ft. by 77 ft., 192 ft. high, and above its first story, which contained the machinery, there were 95 reënforced concrete bins, 15 ft. in diameter by 74 ft. high with a capacity of 931,000 bushels, and above the bins was a cupola several stories in height. Adjacent to the storage house was a receiving shed in which cars on five tracks could be unloaded. The working house had a capacity for handling 1,250,000 bushels of grain in 24 hours. The storage house consisted of 104 reënforced concrete bins, 22 ft. 6 in. in diameter by 104 ft. high, with a capacity of 4,383,000 bushels. The river house consisted of a first story 18 ft. 9 in. in height supporting 24 grain bins similar to those in the storage house and having a total capacity of 778,000 bushels. The river house was equipped for loading grain into boats and a large marine tower for unloading ships. The entire plant was carefully planned and consisted entirely of reënforced concrete or steel frame construction covered with wire mesh and plaster.

The Pennsylvania Railroad before the close of navigation on the Great Lakes put into operation at Erie, Pa., a new steel concrete elevator consisting of 30 reënforced circular tanks, 18 interstice tanks, and 22 side and pocket bins affording a total capacity of 1,156,400 bushels. This elevator was absolutely fireproof and had powerful car pulling machinery for placing the cars, of which 150 could stand on adjoining tracks. The machinery is operated electrically and electric lights are used throughout. It was capable of unloading grain at the rate of 25,000 bushels an hour. The first cargo which was elevated and transferred to cars consisted of 101,000 bushels of wheat. As the Port of Erie involved a shorter lake trip than Buffalo the new elevator was considered of considerable assistance in the prompt moving of the northwest wheat to the seaport.

ELGIN (and KINCARDINE), VICTOR ALEXANDER BRUCE, ninth Earl of. A British statesman and administrator, died at Broomhall, Dunfermline, January 18 1917. Descended from Robert the Bruce of Scotland, he was born in 1849 at Monklands, near Montreal, while his father, the eighth Earl, was Governor General of Canada. His education was gained at Eton and at Balliol College, Oxford, where he took the M.A. As a boy he succeeded his father in 1863, and settled in Scotland, where he was long chairman of the Scottish Liberal Association. Since 1886 he has been lord lieutenant of Fifeshire. In the Gladstone ministry of 1886 he served as Treasurer of the Household and then as First Commissioner of Works, but it was not till he was sent to India as viceroy in 1894 that he gained an international reputation. His father had been viceroy thirty years before. During the five years Lord Elgin held office the country suffered from frontier wars and financial troubles, and earthquakes, plague, and famine, kept the people constantly restless. The viceroy was successful in relieving distress and restoring order and in advancing public works projects. He was rewarded by being created Knight of the Garter. In 1902 he was chairman of the royal commission appointed to investigate the conduct of the South African War, and from 1905 to 1908 he held the post of Secretary of State for the Colonies. Afterward, as chairman of commissions to deal with the ecclesiastical situation in Scotland, he performed valuable service. Lord Elgin, besides, acted as chairman of the Carnegie Trust. He received various decorations and degrees and in 1914 was chancellor of Aberdeen University. He declined a marquisate.

EMBARGO. See UNITED STATES AND THE WAR.

EMERGENCY FLEET CORPORATION. See SHIPBUILDING; and SHIPPING.

EMORY, WILLIAM HEMSLEY. An American naval officer, born in Washington, D. C., on December 17, 1846, died on July 15, 1917. He was graduated from the United States Naval Academy in 1866. He was almost continuously at sea until 1884, serving among other duties as aid to Admiral David Porter. Promoted during the various grades he became a captain in 1901 and rear admiral in 1906. His commands include the *Bear* (1884), the *Despatch* (1885-86), the *Thetis* (1887-89), the *Petrel* (1894-96), the *Yosemite* (1898-1900), the *Monongahela* (1901), the *Indiana* (1901-03), and the *Hancock* (1904-06). He also served at the Naval Academy and the Naval Observatory and was naval attaché in London. In 1907 he commanded the Second Squadron of the Atlantic Fleet, and in the following year was retired.

ENGINEERING. The entrance of the United States into the ranks of the belligerent nations meant that all the resources of a country that had been active in all phases of engineering and manufacturing work now were to be applied directly to the problems of war. In other words, with the best engineering minds of Europe actively devoted to war, and war developments, the United States too was bringing to bear a wealth of talent which unquestionably would develop new methods and practices in military engineering, just as had been done in the civil engineering of the new world where many problems of construction had been solved. In the United States the erection of new buildings, bridges, and other work naturally was temporarily halted, save in so far as they concerned the manufacture of munitions and the provision of means of transportation to carry these products to the seaboard and the battle-front.

The first answer of the engineers of the United

States to the call to the colors was seen in the raising of volunteer engineer regiments. The engineer troops of the army, by an act of Congress, were increased in number and the existing battalions were subdivided to form the basis for new organizations. A large number of prominent engineers in various fields already had been enrolled and commissioned in the Officers' Reserve Corps, and immediately on the outbreak of war, they were assigned to the volunteer regiments as organized. The commanding officers and the adjutants were usually men from the United States regular army, but the line officers and the rank and file were made up of engineers and workers who were skilled specialists in various fields. Thus railway troops divided into regiments for construction, operation, and light railway workings were organized, as well as regiments for lumbering, forestry, quarrying, water supply, camouflage, wharf construction, gas and flame work, surveying, road making, and other fields, amounting in all to some 46,000 men. Some of these were among the first American troops to go to France, and the 11th United States Engineers in particular figured in the battle at Cambrai.

While not all the engineers in the United States obviously could go to the front, or engage as combatants, there was a vast amount of engineering work in connection with the war. Thus the mechanical engineering in connection with the Liberty Motor for the United States aëroplane and the Liberty Truck in the United States Army's Quartermaster's Department, were no mean achievement in engineering. (See AËRONAUTICS AND AUTOMOBILES.) The work in SHIPBUILDING (q.v.) also represented problems of engineering organization which was undertaken during the year with the promise of results rather than a record of actual accomplishments. In military engineering, the record as given under MILITARY PROGRESS (q.v.) showed a vast amount of work in all fields of applied science, while under NAVAL PROGRESS (q.v.), the construction of battleships and submarines involved engineering of a high degree.

ENGINEERING STUDENTS. A serious condition arose in connection with the draft, in that students in the engineering schools reaching the draft age, who had not completed their courses, were called to the colors under the terms of the Conscription Act. Many, if not the majority, of these students were anxious to enlist in the first place, but were urged by their instructors and members of the engineering profession, that their duty lay in remaining at their studies and preparing themselves for future usefulness. A number of students being drafted under such conditions, the seriousness of the matter was realized by the War Department, and means were provided whereby such students might be exempted from actual service during the time of their college work, but upon graduation, they would be subject to call by the army. It was believed at the end of the year that a satisfactory solution of this matter had been reached, although naturally the various engineering schools suffered a marked decrease in numbers through enlistment by students.

MILITARY ENGINEERING. The participation of the United States in the great war, lent additional emphasis to the recommendation of the Secretary of War that an enlarged army engineering school should be maintained to give an intensive course to graduates of the United States Military Academy at West Point. Military engineering like other branches of engineering activity has so developed as to require proper and special preparation which for many years West Point had been unable to give, organized as it was on a somewhat elementary basis.

An Officers' Reserve Corps of civil engineers for the United States Navy was established in 1917, and an eligible list was formed by men suitable for such work along lines similar to that previously established in the United States Army. These men would serve in the Bureau of Yards and Docks of the United States Navy Department.

AMERICAN SOCIETY OF CIVIL ENGINEERS. A notable event in American engineering was the occupation by the American Society of Civil Engineers of its new quarters in the Engineering Societies Building, West Thirty-ninth Street, New York City. This took place officially on November 7, and was important in that under a single roof were housed the leading engineering organizations of the United States. The American Society of Civil Engineers gave up its own special building to join the other societies, and would benefit also in the joint engineering library, which is an important feature of the building.

A record of engineering in 1917 would deal rather with projects completed than with new works put under way. The completion of the Catskill Aqueduct (see AQUEDUCTS) marked the end of a notable work, which had been described from time to time in the YEAR BOOK, as was practically the case with the New York State Barge Canal (see CANALS). In bridge construction, three notable structures including the record Quebec Bridge, were finished, and a number of other works were also built (see BRIDGES). The record for DAMS (q.v.), while not including the large structures in previous years, is also summarized elsewhere, while for the increased commerce due to the war and to anticipated increases later, there were many DOCKS AND HARBORS (q.v.) and other port improvements under way. IRRIGATION AND DRAINAGE (q.v.) while not figuring to the extent of previous years, received attention, and FLOOD PROTECTION (q.v.) was an important topic in the Middle West of the United States. The railways as a result of the war had their own special problems, and while the construction was limited, yet the difficulties of operation due to congestion and inadequate equipment involved many difficulties of operation which are discussed under the article RAILWAYS (q.v.). The extensive use of AUTOMOBILES (q.v.) not merely for pleasure, but for commercial service, and particularly for long distance haulage especially with the congestion of the railroads, led to increased interest in ROADS and PAVEMENTS (q.v.), and the matter really became one of national rather than local importance. WATER WORKS (q.v.) and purification figured not only in the ordinary developments of American and European cities, but particularly in the case of the army cantonments, for which adequate water facilities were provided in an incredibly brief space of time.

In municipal engineering, the municipal engineer was assuming a larger rôle, and in schemes of municipal government, municipal ownership and, CITY PLANNING (q.v.) distinct advances were being recorded. In such special lines as sewerage and sewage treatment and garbage and refuse disposal, economies and sanitation were involved as never before.

While the war was not actually brought to the United States, yet the large number of fires in munition plants and conflagrations due directly or indirectly to hostilities, should have made the American people realize that FIRE PROTECTION (q.v.) was a subject of special concern, and that the destruction of munitions in a plant was quite as serious as on the battle-front, and the loss of foodstuffs burned in a grain elevator or warehouse was in effect but little different from their destruction by a submarine, while afloat. Consequently, the efforts of insurance engineers and fire engineers during 1917 were of special interest. One of the perennial problems in the United States was that of RAPID TRANSIT (q.v.) for which the great cities were constantly demanding greater facilities, yet never seeming to be satisfied. In 1917, important progress was made on the various lines under construction in Greater New York, while throughout the country, other projects were being developed or brought nearly to completion.

The activity of the chemical engineer and the research chemist by 1917 had gone a long way towards making the United States independent of Europe for various chemical materials and products. Under CHEMISTRY, INDUSTRIAL, there will be found a record of the extraordinary developments in this field which in many cases involved the establishment of new industries which never before had been successfully founded in the United States. Added to this the war required various economies of production and general efficiency and the utilization of home products in place of those previously imported. In fact, industrial chemistry was concerned in a remarkable degree with the industrial progress of the year, and also with the military operations themselves, new explosives, new poisonous gases, and new metallurgical processes being brought to the front.

The record for METALLURGY (q.v.), given elsewhere in this YEAR BOOK, was not one that showed striking progress except in efforts at production and the utilization of new methods that would accomplish this end. Electric processes for the refining of various metals, notably iron and steel, formed an important element in the year's record, but universally the needs of the war were the first consideration in metallurgical work and in the United States organizations for adequate production was the prime consideration (see IRON AND STEEL). In mechanical engineering, such topics as BOILERS, INTERNAL COMBUSTION ENGINES, STEAM TURBINES, and REFRIGERATION (q.v.), contributed their share to the record of the year. In electrical engineering the most notable advances were under ELECTRIC RAILWAYS and ELECTRIC LIGHTING (qq.v.). In the various engineering industries, however, great output was sought rather than innovations in method or processes.

ENGLAND. The largest and most densely populated portion of the United Kingdom. The term "England," especially when referring to the government, is sometimes used for "United Kingdom." See GREAT BRITAIN.

ENGLAND, CHURCH OF. Again in 1917 all great church questions in England were considered in their relationship to the great war. The year saw the putting into concrete form the great spiritual movement, called "The National Mission of Repentance and Hope." This movement was the subject of speeches by the Archbishops of Canterbury and York in the latter months of 1916. The problem of the church was to adjust itself to the greater democracy brought about by the war and to rise to meet the needs of the soldiers and others whose views and religion had broadened as a result of the war. The keynote of the movement is a religion that will meet satisfactorily the new times and conditions. The church continued the practice of erecting wayside crosses or calvaries in memory of those who had died for their country. The church also continued an active campaign for the repeal of the Welch Church Art, the execution of which had been postponed until the close of the war. The revision of the Prayer Book seems to have been indefinitely postponed.

ENGLISH LITERATURE. See LITERATURE, ENGLISH AND AMERICAN.

ENTOMOLOGY. Because of the need for conserving food, there was especial interest in economic entomology in 1917 and while most of the results were rather too technical for a general summary, the publications of the State Boards of Agriculture as well as those of the Federal Department of Agriculture, can be consulted with profit. The house fly was the subject of a special bulletin published by Howard and Hutchinson in Washington, and in a pamphlet by Felt published by the New York State Museum. No remedies other than those earlier given were proposed (see YEAR BOOK for 1916). Smith stated that the parasitic hymenopteron, *Perilampus*, instead of laying its eggs in the body of its host puts them on leaves where they are either eaten by the host insect or hatch and crawl on to the host. According to Marchand the snow fly, *Chionea*, prefers to run about on the surface of snow, being repelled by a warm object, as, e.g., the hand. This may be explained on the assumption that mating is easier on the surface than it would be under the snow.

Some progress was made in the solution of the gypsy and brown tail moth problem, which was an acute one in Canada as well as in the United States. According to the report of the Dominion entomologist, gratifying results followed the use of parasites imported from the United States. It was interesting to note that the gypsy moth at one time appeared in England, but did not get a firm hold. The boll weevil problem is still serious. Hunter reported that no special treatment had been successful and advised combating it by fall plowing and cleaning fence rows. An early crop of vigorous plants is desirable, as these are less liable to be attacked. See COTTON.

Chambers stated that trypanosomes may be spread in regions free from the tsetse fly, by biting flies, the Tabanidæ being the worst offenders.

Benedict studied the clothes moth, in the hope of discovering some way of moth proofing fabrics. The only clothes moth he found in New York City in four years was *Tineola bisclliella*. The eggs are laid in June and July, from 40 to 50 eggs being the usual number, and the females die immediately after. The young hatch in 7 days, and begin to feed, some forming "tunnels" and others not forming permanent cases until they pupate. Camphor and naphthalene in closed places kill the larvæ, and probably poisonous gases would do the same, though this he did not try. He was unable to find any substance with which cloth could be soaked that would kill the insects. Corrosive sublimate was tried, but without effect.

It was reported early in 1917 that the pink bollworm, *Gelechia gossypiella*, was established as a cotton pest in northern Mexico, the eggs having been imported in cotton seed from Egypt in 1910. Its original home was in India. The U. S. Department of Agriculture has established a strict quarantine to prevent the introduction of the insect along the Texas border. A similar introduction of this insect into Brazil occurred some years ago, and it was reported in 1916 that it had become a very serious pest, the yield of some fields having been reduced one half.

Wodsedalek reported some observations on the ability of insects to live without food, and found that in *Trogoderma tarsali*, one individual lived for 5 years, 1 month and 29 days, while some that were not fed at all after hatching lived for 4 months. If partly grown individuals are starved they will shrink to about the hatching size, but the original size may be regained if food is again given them. This process may be repeated several times.

McIndoo in the ***Smithsonian Miscellaneous Collections*** discussed the question of recognition among insects. His experiments were on the honey bee, and his general conclusion was that in these insects the hive odor is the most important of any. This is a composite odor, made up of the individual odors from all of the workers in the hive, and is supplemented by the odors from the queen, drones, comb, frames, and wall of the hive, etc. From this it is easily seen why no two hives have the same odor. The queen odor is evidently very important in the hive, for without the queen the workers become restless and irritable. Bees working in the field lose some of their hive odor, while if kept in a free current of air away from the hive for three days they lose the hive odor altogether. He thought that the ruling spirit in the hive is this hive odor, the queen odor component being of the greatest importance in maintaining harmonious relations in the hive. A later part of his paper is devoted to a list of the scent producing organs in the various insect orders. These are usually glands but other structures may function in this way. See ZOÖLOGY.

EPILEPSY. Reed's contention that epilepsy is due to a toxemia produced by the activity in the intestine of a specific microörganism has been withdrawn by him. He declares, nevertheless, that the clinical results derived from surgical correction of chronic constipation and its consequent toxemia, impel him to continue his work with the hope that a specific cause may yet be discovered.

He says, "I directed my bacteriologic service to make a systematic examination of the blood in all convulsive cases which were presented for diagnosis. The result of this routine was that after several months I was furnished the data embraced in my report submitted to the Cincinnati Society for Medical Research. The organism there described was sent in the form of photographs, slides, and cultures, whenever requested, to various institutions and independent investigators with the request that each take up the investigation *de novo* with reference to confirming or disproving the findings which I had published. Several investigators complied with my request, some with positive and other with negative findings. At the same time my own bacteriologic service went over its own work in a very painstaking way. As a result I have just had submitted to me the protocols of 578 observations, of which 491 were negative and 114 were positive. In a final series of thirty-six consecutive cases at the Sterling Hospital, all were negative. The report concludes with the statement: 'with a revised technic and modified surroundings, it has not been possible to confirm the observations formerly submitted to you.' In view of this finding, I feel it my duty at once to request that so much, but only so much, of my previous contributions as relate to the identity of a presumably specific organism and to the existence of an actual bacteremia in these cases may be considered as withdrawn."

EPIRUS. An ill-defined district embracing southern Albania and northwestern Greece. Anciently Epirus was the northwesternmost division of Greece. After the Balkan wars of 1912-13, Greece annexed part of Albanian Epirus. In November, 1914, with the consent of the great Powers, Greece occupied the northern part of the district, and in March, 1916, formally took possession of it. The population is estimated at about 500,000, but this figure is probably excessive. The towns include Janina (about 16,800 inhabitants), Argyrocastron (12,000), and Koritsa (8000).

EPISCOPAL CHURCH. See PROTESTANT EPISCOPAL CHURCH.

EPIZOÖTIC LYMPHANGITIS. See VETERINARY MEDICINE.

EPWORTH LEAGUE. See articles on Methodist denominations.

ERITREA. An Italian colony on the west shore of the Red Sea, with a coast line of about 670 miles and an estimated area of 45,800 square miles; population, 279,000. Asmara is the capital. Salt is an important product, being sent to southern Abyssinia where it is a momentary currency. Imports 1915, 23,623,490 lire. Exports, 14,005,201; transit 5,845,617. Tonnage entered, 356,258. There are 74 miles of railway. The railway from Massaua to Asmara was finished in 1911; it will be extended to Keren and Agordat. Estimated revenue (1916-17), 22,765,221 lire (state contribution, 17,440,000); expenditure, 22,765,221 (military administration, 4,865,449; civil administration, 17,899,772). Senator Nobile Giacomo de Martino was appointed governor in 1916.

ESTHONIA. A government of Russia, lying south of the Gulf of Finland and north of Livonia. Area, 7818 square miles; estimated population January 1, 1915, 512,500. The capital is Revel, a fortified seaport, which before the war had an estimated population of 137,600. The Esthonians number perhaps 1,200,000 of whom more than 400,000 live in Esthonia. Like the Finns, to whom they are closely related, they retain many characteristics which reveal their Mongolian origin. The Imperial Russian government made systematic efforts to Russify the Esthonians, trying especially to abolish the use of their Finnic language, to which they held tenaciously. Also the Orthodox church carried on an active propaganda in Esthonia, but according to the latest religious census about 96 per cent of the inhabitants were Lutheran. The dominant element of the population has long been the nobility, chiefly of German descent, who up to 1878 owned more than half the land; but during the last quarter of a century there has been a marked increase in the number of peasant proprietors. It is stated that in Esthonia agriculture is practiced in a more scientific manner than in any other section of Russia. The chief agricultural products are oats, barley, rye, potatoes, and vegetables.

ETHNOLOGY. See Anthropology.

EVANGELICAL ASSOCIATION. A religious denomination principally composed of German-born citizens of the United States. Its doctrines are practically the same as those of the Methodists and its communicants belong to nearly all parts of the northern section of the United States and Canada. There are also many to be found in the West and South. The missionary work is chiefly carried on among Italian immigrants. In 1917 the denomination had 1056 ministers, 1625 churches, and 120,387 communicants. The church is divided into 24 districts for administrative purposes, has more than 180,000 pupils in the Sunday Schools, and a Young People's Alliance whose membership numbers nearly 55,000. A preaching house is maintained in Cleveland, Ohio, and there are several philanthropic institutions and hospitals in Chicago, Philadelphia, and cities throughout the Middle West. Northwestern College (q.v.), Napierville, Ill., is the leading educational institution.

The United Evangelical Church is a denomination of the same doctrinal beliefs and polity as the Evangelical Association. Last year it had a total membership of 89,920, 920 churches, and 950 Sunday Schools. The young people's societies and the missionary work both at home and abroad spent a very active and successful year. In 1917 there were approximately 310 home missions in operation and these missions had a church membership of almost 36,000 and a Sunday school enrollment of 61,500. The missionary work in China was very successful as was the first year of the theological school opened last year at Hunan. The leading educational institutions are Albright College, Western Union College, the Bible Teachers Training School, New York City, the Oregon Bible Training School, and the Illinois Training School for Christian Workers. The publishing house is at Harrisburg, Pa.

EVANS, Edward Payson. An American scholar, died in New York City, March 6, 1917. He was born at Remsen, N. Y., in 1831, but removed to Michigan in 1850. He took the degrees of A.B. and A.M. at the University of Michigan, to which, after some years of teaching and of travel and study abroad he returned to be professor of modern languages and literatures from 1862 to 1867. After 1870 he spent most of his time in Germany, where he joined the staff of the *Allgemeine Zeitung*, Munich, in 1884. He was also a contributor to various other German papers and to American journals. In 1873 he declined the chair of Sanskrit at the University of Lahore, India. Mr. Evans transplated Stahr's *Life of Lessing* and Coquerel's *First Historical Transformation of Christianity* into English, and he wrote: *Animal Symbolism in Ecclesiastical Architecture; Evolutional Ethics and Animal Psychology; Beiträge zur Amerikanischen Litteratur und Kulturgeschichte* (2 vols.); *The Criminal Prosecution and Capital Punishment of Animals.* In his later years he worked on a five-volume *History of German Literature* (in English).

EVOLUTION. See Zoölogy.

EXPERIMENT STATIONS. See Agricultural Experiment Stations.

EXPLORATION. The unknown areas of the earth received scant attention in 1917 from adventurous men, whose energies were primarily devoted to the war. Such explorations as have been made have turned rather to developing needful resources of remote regions rather than to the discovery of new lands. As might be anticipated the principal explorations have been carried on in the peaceful western hemisphere.

Africa. Explorations in southern Africa have been confined to reconnaissances connected with military operations, especially in the little-known interior of German East Africa. In the north the extension of the French railway has opened remote regions of Morocco to the world.

Asia. Not only have no recent explorations been initiated on this continent, but the regular Russian hydrographic surveys of the Siberian waters have been discontinued. In connection with such work it is to be noted that the Russian government has formally annexed to Russia the archipelagos of De Long, New Siberia, and, Nicholas II, as well as Wrangell Land and the islands of Vilkitski.

Europe. The construction of the railway from Petrograd to the Murman coast opens up regions on the Arctic coast, barely known.

Australasia. The exploration of hitherto untraversed portions of the interior of Australia, completed in 1916, became available during 1917. The journeys over the vast, desert region of the interior, made by T. E. Day, former surveyor general, involved no less than 7000 miles of travel, camel transportation being largely employed. The object was to determine what part of the unknown regions were available for settlement,—pastoral or agricultural. The country thus explored lies between 21° and 26° N. lat., and from 131° to 138° W. long., embracing an area of more than 100,000 sq. mi. Nine tenths of central Australia is unoccupied, and the regions explored give small encouragement for settlement, owing to aridity, remoteness of markets, and lack of transportation.

The unknown parts of Papua (British West New Guinea) the second largest island of the world, have been the object of a second expedition by Dr. Arthur Wade. His last explorations covered 3000 sq. mi. of the coast, between the Purari delta and Yule Island. Following the Vailal River, which he surveyed en route, he reached its head-waters. There he found an inhabited region, occupied by the mysterious Kuku tribes. They have extraordinary customs as to methods of life, of dress, and of transportation.

North America. This continent has been the field of operations of the Canadian Arctic Expedition, under Stefannson, and also of McMillan's (see Polar Research), as well as of two expeditions of the National Geographic Society, in Alaska and in Labrador. The Labrador expedition was under the Carnegie Museum of Pittsburgh, the National Geographic Society coöperating. The work done by Messrs. W. E. C. Todd and A. Marshall was biological and geographic. Starting from Seven Island in April they returned in late October, after obtaining important and extensive results in their journey of about

750 miles. They traversed Labrador from south to north over regions hitherto unknown to the civilized world. In addition to their large collections they discovered several chains of lakes and connecting streams hitherto uncharted and unknown. These explorations solve some of the mysteries of interior Labrador.

The most notable expedition of the year was that sent by the National Geographic Society to the Katmai district, southeastern Alaska, under command of Dr. Robert F. Griggs, who had previously visited the region. The eruption of Mt. Katmai, in 1912, had completely changed the topography and physical conditions of the surrounding country. The expedition of 1917 explored and charted about 1600 sq. mi. of unmapped territory, and made complete collections of insects, birds, plants, and of geological specimens. The violence and force of the eruption of 1912 is indicated by the discovery that not only did Katmai blow off its head, but it left one of the largest craters in the world, more than 9 miles in circumference and 3600 feet in depth. The volcanic energy also broke up the surrounding country, leaving countless rifts and fissures through which are ejected at intervals steam jets to a mile high. These vents are practically numberless, running in number up to many thousands. Altogether it presents conditions far more striking than Vesuvius or any other known volcano of to-day. It is the wonder-land of America.

South America. The American Museum of Natural History, of New York, still continues its biological survey of South America. There are now available the results of the last three expeditions which, sent to that continent for zoölogical research, compiled much data and collected many specimens, especially of birds and mammals. The first expedition, under charge of Dr. Frank M. Chapman, made a general scientific reconnaissance in Ecuador, central Chile, and the Organ Mountains of Brazil. The second party, led by Leo E. Miller, collected extensive zoölogical specimens in northwestern Argentina, and in the regions extending from the west border of the Chaco to the summit of the Andes. The third expedition was in charge of George H. Cherrie, who explored the vast marshes of southwest Brazil. His work was a continuance of the researches of the Roosevelt expedition of 1913-14, with which Cherrie and Miller coöperated as representatives of the Museum. Dr. Hamilton Rice, the well-known explorer, renewed in 1917 his South American researches. He ascended the Amazon 2100 miles to the Solimoes, charting the navigable channel beyond Manaos, at the mouth of the Negro, to his farthest point at Iquitos, Peru. On his return he supplemented his explorations covering the Waupee tributary of the Negro (1907-08), by ascending that river 425 miles to Santa Isabel. Unfavorable conditions obliged Rice to confine his researches to the Rio Negro.

Miscellaneous. Among expeditions to ascertain resources may be mentioned that of Prof. A. S. Hitchcock to determine the flora of the Hawaiian Islands. Of special importance, however, were the researches conducted under the direction of Director G. O. Smith, U. S. Geological Survey, to ascertain within the United States deposits of "war minerals" essential for the successful prosecution of the war. Among these were oil, manganeses, pyrites, chromite, tungsten, antimony, potash, and nitrate. The success of such exploratory-research was evidenced by the increase in manganese ore, which increased fourfold from 27,000 tons in 1916 to 122,000 tons in 1917. See Polar Research.

EXPLOSIVES. See Chemistry, Industrial.

EXPOSITIONS. No important or international exposition was held during the year.

Panama-California Exposition. This exposition was held during 1916 in San Diego, Cal., and closed at midnight on January 1, 1917. The estimated attendance was 2,250,000 persons. The main building and the landscape effects were preserved and in 1917 they were being used as a naval training station.

Trade Fairs. The great trade fairs which for years have been held in Leipsic, Germany, and elsewhere have extended to other countries as noticed in the Year Book for 1916 (p. 211). Their special feature was the exhibition of samples and solicitation of orders. The third British Industries Fair was held in London, England, from February 26 to March 9. The total number of exhibitors was 440 and the exhibits were confined to toys and games, earthenware and china, glass, fancy goods, stationery, and printing. A fair of similar character was held in Glasgow, Scotland, during the same period. Also a Sample Fair was held in Sydney, Australia, during September. The third Sample Fair of Lyons was held from March 15 till April 1. There were 3159 exhibitors and there was an exhibit under the auspices of the Department of State of American catalogues and other trade literature. The tenth Sample Fair of Paris was held from May 14 till May 31 at which 1800 exhibitors participated. As contrasted with the Lyons fair, which is international, the Paris fair was reserved entirely for French exhibitors, although it was open to buyers from all countries except those with which France is at war. The second Bordeaux Sample Fair was held from September 1 to September 15.

A first Swiss Sample Fair was held in Basel, from April 15 to April 29 at which the exhibits consisted only of products of the textile industry, toys, watches and jewelry, machinery and electrical articles, chemical products, canned goods, chocolate, and dairy products, made in Switzerland.

The first Dutch Sample Fair ("Jaarbeurs") was held in Utrecht, Holland, from February 26 to March 10, with 670 participants. It was national in character and no foreign goods were admitted for exhibit. A permanent international exhibition of industrial products and articles of commerce of every description both domestic and foreign, is announced to be held in Amsterdam, Holland.

The usual fairs were held in Leipzig and that of August was the seventh war fair ("Kriegsmesse") and was conspicuous for the many substitute articles shown, notably those designed to take the place of linen, cotton, jute, and other fabrics many of which were described as "surprisingly successful." The Nizhni Novgorod fair this year was the "quietest ever held" and showed a decrease of manufactured articles, and from the Irbit (Russia) fair a similar experience is reported, the articles being confined almost exclusively to furs and skins.

Minor Expositions. The third Brazilian Fruit Exposition was held in Rio de Janeiro from January 18 to February 5. An International Cattle Exposition was held in Rio de Janeiro, Brazil, from May 13 to May 28 with a congress at which pertinent topics were discussed. A permanent annual exposition devoted to furniture, tortoise-shell work, and floriculture was opened in San José, Costa Rica, on September 15. An Industrial Exposition was held in Santiago, Chile, beginning September 17. An Exposition of toys and sports goods was held in Venice, Italy, from September 20 to October 31.

Miscellaneous. The Pilgrim Tercentenary Commission proposed to hold an international exposition at Boston in 1920 or 1921 to erect a memorial hall on Cole's Hill, Plymouth, to present at Plymouth in a structure to hold 10,000 persons a historical pageant, besides altering and improving the present unsightly water front adjacent to Plymouth Rock and to establish there a beautiful public park. For the preliminary plans the Massachusetts legislature appropriated $50,000 but the bill was vetoed by the governor.

The Mississippi Centennial Exposition planned to be held in Gulfport, Miss., during 1917-18, commemorating the centenary of the admission of Mississippi to the Union, was postponed owing to the war and the failure of Congress to appropriate funds for the government exhibits.

An exposition of science, arts, and industries commemorating the 300th anniversary of the settlement of the Borough of the Bronx in New York City was announced to be held during May 30-November 1, 1918. The site, consisting of 25 acres, is on the William Waldorf Astor property at East 177th Street and the Bronx River. For the display of artistic, scientific, and industrial accomplishments of the nations of the earth nearly a hundred buildings were being constructed and of these the larger in the Spanish Colonial style of architecture, including palaces devoted to American Achievements, Pan-American Exhibits, Fine Arts, Manufactures and Liberal Arts, Varied Industries, Horticulture and Agriculture, Machinery, Automobiles, etc. The amusement features were to be many. If this exposition should prove a success, like similar enterprises at Shephard's Bush and Earl's Court in London, it would be held annually in commemoration of some special event.

EZEKIEL, Moses. A distinguished American sculptor, who had lived in Rome, Italy, for more than 40 years, died in that city March 27, 1917. He was born in Richmond, Va., October 28, 1844, and as a boy showed his artistic talent. He entered Virginia Military Institute, from which he graduated in 1866, having meanwhile served as a cadet in the Confederate army. To ground himself in anatomy he studied in the Medical College of Virginia. From Cincinnati, whither he had removed in 1868, he went the next year to Berlin, and there was a pupil of the Royal Academy and of Albert Wolf. A colossal bust of Washington brought him admission to the Berlin Society of Artists, and in 1873 he won the Roman prize, the first time it had been awarded to a foreigner. Meanwhile he had acted as a correspondent in the Franco-Prussian War. In Germany he became acquainted with Cardinal Hohenlohe and Franz Liszt, of both of whom he made busts that brought him decorations from the Grand Duke of Saxe-Meiningen. After 1874 Ezekiel made Rome his permanent home, becoming not only one of the most noted and prolific sculptors in the city, but one of its most brilliant figures socially. His studio, in the Baths of Diocletian, was a rendezvous for distinguished visitors and for the finest artistic and musical circles. The sculptor was himself also a musician, pupil of Liszt. The quality of his work, high though it ranks, is not so amazing as the amount of it. His early "Religious Liberty" was placed in Fairmont Park, Philadelphia, after being shown at the Centennial Exposition. "Virginia Mourning Her Dead" is at the Virginia Military Institute. For the Corcoran Art Gallery, Washington, he designed 11 statues of famous sculptors and painters. His other subjects included such a variety as "Eve," "David," "Judith," "Christ," and "The Madonna"; mythological characters; "Columbus," "Robert E. Lee," "Lord Sherbrooke," "Napoleon I," "Stonewall Jackson," "Thomas Jefferson," "Farragut," "Longfellow," "Poe," and "Mrs. Andrew D. White." For the University of Virginia he designed a "Homer" group and for the Confederate cemetery at Johnson's Island, Ohio, a monument entitled "The Outlook." He was decorated by the German Emperor with the order Pour le Mérite in art, and by King Humbert and Victor Emmanuel. Vitality and freedom from conventional methods are characteristic of his work, which shows more German than classical influence.

FAILURES. See Financial Review.

FAIRCHILD, Edward Thomson. An American educator, died in Durham, N. H., January 23, 1917. He was born at Doylestown, Ohio, in 1854, and received his education at Ohio Wesleyan and Wooster Universities. Removing to Kansas in 1885, he served as regent of the State Agricultural College from 1889 to 1907 and then as State superintendent of public instruction till 1912, when he was appointed to the presidency of New Hampshire College. Dr. Fairchild received an honorary A.M. from the Kansas State Agricultural College and the Ph.D. from Baker University. He was a member of the National Council of Education.

FALCONIO, Diomede, Cardinal. A Roman Catholic prelate, died in Rome February 7, 1917. He was born in 1842 at Pescocostanzo in the Abruzzi. At eighteen he entered the Franciscan Order in Italy. After five years he was sent to the United States, where he was ordained and became identified with St. Bonaventure's College at Allegany, N. Y., as professor and vice-president and in 1868 as president. For ten years before his return to Italy in 1883 he served as diocesan chancellor of the cathedral at Harbor Grace, Newfoundland. He held a number of offices in his order, including those of provincial in the Abruzzi and procurator-general, being chosen to the latter by the General Chapter in Rome in 1889. Cardinal Falconio was consecrated bishop of Lacedonia in 1892 and archbishop of Acerenza in 1895. Four years later he was appointed the first permanent apostolic delegate to Canada, and titular archbishop of Larissa, and from 1902 to 1911 he was stationed in Washington as apostolic delegate to the United States. During his earlier residence in this country he had become naturalized as an American citizen. He was made cardinal priest in 1911 and cardinal bishop of Velletri in 1914. A collection of his pastoral letters was translated into French.

FALKLAND ISLANDS. A British crown

colony in the south Atlantic. It is composed of the following islands: East Falkland (3000 square miles), West Falkland (2300), and about 100 smaller islands (totaling about 1200 square miles). South Georgia, a group of islands 54½° S., with an area of about 1000 square miles, a great whaling station, is a dependency of the Falkland Islands. Estimated population December 31, 1915, 3451. Sheep-farming is the sole industry of the colony, the entire country being wild moorland fit for little besides pasture. Horses numbered 3545, cattle 7800, sheep 691,000 in 1915. Hides, skins, horns, hoofs, bones, tallow, wool, and guano are the exports. Whale produce exported in 1915 was valued at £1,333,401, of which £689,128 from South Georgia. Imports and exports for 1915 were valued at £368,272 and £1,576,126 respectively (£93,913 and £471,156 in 1911). Revenue, 1915, £43,627; expenditure, £33,600. There is no public debt. The only town is Stanley, with about 950 inhabitants. It has a fine inner and outer harbor and is a coaling station for vessels rounding Cape Horn. The islands were taken by Great Britain in 1832 for the protection of the whale fisheries. Dependencies beside South Georgia are the South Shetland, Graham's Island, the South Orkneys, and the Sandwich group.

FARM LOANS. See AGRICULTURAL LEGISLATION.

FARMS AND FARM LABOR. See AGRICULTURE.

FARTHER INDIA. See INDO-CHINA.

FEDERAL COUNCIL OF THE CHURCHES OF CHRIST IN AMERICA. The council officially unites in its activities thirty Protestant denominations, including 140,000 churches, with about 18,000,000 members. Its purpose is to unify the work of the Protestant churches in coöperation. It is authorized to voice the conscience of the Protestant churches on important matters and within proper limitations to act for them, without, however, interfering with their autonomy. Its national office constitutes a general Protestant headquarters and clearing house.

The lines of activities are indicated by the names of the commissions, which consist of about 100 men each, nominated by the thirty constituent bodies as follows: The Commission on the Church and Social Service, for action on social questions in the light of Christian principles; Commission on Evangelism, for united evangelistic work regulated by the churches; Commission on the Church and Country Life, for the conservation and development of rural churches; Commission on International Justice and Goodwill and Commission on Relations with the Orient, coöperating with the World Alliance for Promoting International Friendship through the churches, for the purpose of influencing international relations by the application of Christian principles; Commission on Christian Education, for bringing into coöperation all the educational boards of the churches for the consideration of such common matters as religious instruction in connection with the public schools; Commission on Temperance; and also special committees on Foreign Missions and Family Life and Religious Rest Day.

The Home Missions Council brings together the various home mission boards in the interests of effective distribution of missions and churches, and the Commission on Inter-Church Federations is engaged constantly in organizing federations of churches in local communities. The council maintains a publication department which in 1917 published and sent out over a million books and pamphlets relating to the unified work of the churches in the council. The various YEAR BOOKS issued complete ecclesiastical information and statistics.

On May 8 and 9, 1917, the Federal Council held a special meeting in Washington to consider the problems of the churches arising out of the war. In addition to the work of the abovementioned commissions during the year 1917, important special movements, including a campaign for the conservation of human life, conservation of food, the institution of temperance among workingmen, a nation wide movement for war relief and financial relief for suffering churches in France and Belgium, were carried on. In the interests of temperance, the council's commission has united with the National Temperance Society for an educational campaign, publishing three temperance periodicals. On Sunday, November 18, 1917, a representative of the council addressed the convention of the American Federation of Labor during its meeting in Buffalo on the topic, "Can the Labor Movement Stand for the Liquor Traffic?" The council maintains a staff in addition to the general secretary, Rev. Charles S. Macfarland, consisting of seven field and executive secretaries. The national office is in New York, and an office is also maintained in Washington and in several other cities.

FEDERAL FOOD ADMINISTRATION. See FOOD CONTROL.

FEDERAL GRAIN CORPORATION. See AGRICULTURE.

FEDERAL TERRITORY. A territory of the Commonwealth of Australia, situated within the state of New South Wales. It was acquired by the Commonwealth government in 1910 from New South Wales as the site of the permanent Federal capital; the capital, named Canberra, was founded in 1913. It had not yet (1917) become the seat of the Commonwealth government, which remained temporarily at Melbourne, in the state of Victoria. Canberra is 204 miles southwest of Sydney, 429 miles northeast of Melbourne, and about 123 miles west of Jervis Bay. The area of the Federal Territory is 912 square miles. Estimated population June 30, 1916, 2472.

FEDERAL VOCATIONAL EDUCATION AID. See AGRICULTURE; EDUCATION.

FEDERATED MALAY STATES. A British protectorate composed of four states in the Malay Peninsula, as follows: Perak, 7800 square miles; population, 494,057; capital, Taiping. Selangor, 3156 sq. miles; population, 294,035; capital, Kuala Lumpur. Negri Sembilan, 2550 sq. miles; population, 130,199; capital, Seremban. Pahang, 14,000 sq. miles; population, 118,708; capital, Kuala Lipis. Total Federated Malay States, 27,506 sq. miles; population, 1,036,999; capital, Kuala Lumpur.

A table of commercial statistics follows for 1915.

	Imports	*Exports*
Perak	£3,376,428	£6,883,344
Selangor	4,078,214	5,429,044
Negri Sembilan	707,983	1,386,755
Pahang	445,238	702,519

There is no public debt.

Railway lines in operation (1915), 872. The Railways Administration controls the lines in the Malay Peninsula, including the Johore State Railways, leased since January, 1912. In 1913 the Singapore Railway had 20 miles in length, which had been leased to the Railways Administration from the colonial government from January, 1912, at a rental of $150,000 and was purchased for $4,136,000. In 1916, the railways of the Federated Malay States produced a net profit of 4,027,228 dols. (£469,843) as compared with 2,636,397 dols. (£307,579) in 1915 owing to the general prosperity of the country in the year 1916. The total number of passengers carried in 1916 was 14,741,066 as compared with 11,899,028 in 1915. While there was an increase of 28.34 per cent in revenue from all sources, the increased expenditures amounted to 18.30 per cent due to the high cost of stores, coal, equipment, etc. The total capital expenditure to December 30, 1916, was £11,924,732, the capital expenditures during the year 1916 amounted to £373,577 of which £207,638 were spent on lines not open to traffic. The most important work done during the year was the extension of the East Coast Railway in Pehang, and the West Coast Line through Kedah and Perlis to connect the Federated Malay States systems with the Siamese system at the northern frontier. In 1917, this latter section was still further advanced so that a complete overland journey was possible from Bangkok the Siamese capital to Kuala Lumpur the capital of the Federated Malay States. When steelwork is obtained for the unfinished bridges direct traffic will be open between Pahang and Bangkok.

The following comparison indicates the conditions of the Federated Malay States Railways in 1916 and in the year 1913 previous to the war:

	1913	*1916*
Miles open to traffic	771	1,028
Stations	174	211
Engines	153	195
Passenger coaches	298	413
Other coaching vehicles	65	135
Goods vehicles	3,289	3,761
Service vehicles	.....	947
Train mileage	3,351,045	3,829,274
Passengers carried	13,143,659	14,241,066

The high commissioner of the protectorate in 1917 was Sir A. B. Young.

FEDERATION OF CATHOLIC SOCIETIES, AMERICAN. See ROMAN CATHOLIC CHURCH.

FEDERATION OF LABOR, AMERICAN. See LABOR, AMERICAN FEDERATION OF.

FEMINISM. See WOMAN SUFFRAGE; WOMEN IN INDUSTRY.

FENCING. The twenty-fourth annual intercollegiate fencing tournament was won by the United States Naval Academy for the third year in succession. Thomas P. Jeter of the navy captured the individual championship with the foils while James E. Kiernan of the same institution took the sabre title. The national championships of the Amateur Fencers' League of America were held at the Hotel Astor, New York City. Sherman Hall of the New York Athletic Club won the title with the foils and A. S. Lyon of the Fencers' Club took the sabre honors. The three-weapon championship was won by Steddiford Pitt of the New York Athletic Club. Miss Florence Walton of the New York Fencers' Club captured the women's championship. The national interscholastic title went to D. Ducassi of the New York Military Academy.

Dual college meets resulted as follows: Navy 7, Pennsylvania 2; Navy 9, Yale 4; Navy 9, Columbia 4; Columbia 5, Yale 4; Columbia 5, Pennsylvania 4; Harvard 6, Columbia 3; Harvard 7, Springfield Training School 2; Harvard 8, Pennsylvania 1.

FERTILIZERS. War conditions accentuated the fact that an adequate and cheap supply of fertilizers was a basic necessity. The fertilizer situation in 1917 in a large part of the world was an increasing demand and an inadequate supply. The statistics of the world's production, distribution, and consumption of fertilizers, available at the end of 1917 while necessarily very incomplete, indicated clearly a marked falling off during the year in production of mineral phosphates, especially in the United States; an even more marked decline in production of acid phosphate; an increased production and export but a rise in price of nitrate of soda; an increased production of ammonium sulphate, especially in Great Britain and the United States; and an increasing production but still wholly inadequate supply of potash from minor sources.

The situation seemed fully to justify the suggestion which had been made that one of the most pressing problems with regard to the fertilizer industry "is to gradually and normally stimulate domestic sources of supply, not only that a repetition of the present situation will be impossible but also that a more extensive peace time production will be the outgrowth." Important steps had been taken in this direction through government initiative in England, France, and the United States, and perhaps other countries. Early in 1917 the Food Controller of Great Britain appointed a committee to make the necessary arrangements for the increase of supplies of fertilizers in the United Kingdom and for controlling their output and distribution. The shortage and high price of fertilizers and the consequent reduced yield of crops had led the French government during the year to undertake to supply the necessary fertilizers and to make special efforts to encourage the better care and use of manure and waste products having fertilizing value.

During the year the fertilizer business was placed in large measure under governmental control in the United States through the authority given the president by Congress to license the importation, manufacture, storage, and distribution of fertilizers with power to revoke the licenses for cause; through the authority given the U. S. Department of Agriculture to collect data regarding the production, distribution, and consumption of fertilizers, and to purchase nitrate of soda and sell it to farmers at cost; and through legislation empowering the president to construct and operate works for the manufacture of synthetic nitrogen compounds for use in munitions and as fertilizer.

All things considered, the ultimate outlook with regard to fertilizers for the United States was extremely promising. There was an abundant and readily accessible supply of mineral phosphate, and acid phosphate should normally be abundant and cheap, and while the country is still dependent upon outside sources to supply a large part of its needs for nitrogen and potash, much progress has been made in demonstrating that these needs can be wholly met by domestic production. The supply of lime is abundant and should be cheap.

With fertilizers scarce and high priced it was especially important carefully to conserve and use manure. One-half of the value of the manure produced in the United States was probably lost. A large part of this loss would be prevented by better care of the manure, viz., by more frequently spreading it on the land, or by storing it in compact heaps in water-tight covered receptacles. Good husbandry and good business alike dictate that commercial fertilizers shall supplement and not supplant manure. Wide experience has shown that the exclusive use of fertilizers is not good farm practice, and that fertilizers give the most profitable returns when used to supplement farm manure and other home sources of fertility.

From a study of conditions in England with special reference to war-time needs, Voelcker concluded that a supply of acid phosphate, or basic slag, and ammonium sulphate with liberal use of lime to mobilize potash in the soil was essential, and he advised the fullest possible use of all available manure and waste products having fertilizing value, especially those furnishing any considerable amount of potash.

Potash. For all countries except Germany potash continued to be the weakest link in the fertilizer chain. The great natural deposits of potash salts of North Germany, Galicia, Alsace, and Barcelona and Lereda in Spain were not supplying the world at large in 1917 and no similar deposits had been found elsewhere. There was, however, great activity in developing various minor sources of potash. During the first six months of 1917, according to the U. S. Geological Survey, the production of potash in the United States from such sources was about 14,000 tons of actual potash (K_2O), of which natural salts and brines yielded about 7740 tons; distillery slops, wool washings, and other industrial wastes, 2150 ton; kelp, 2140 tons; alunite, cement mill, and blast furnace dust, 1860 tons; and ashes (partially reported) 110 tons.

Activity in the discovery and development of new sources of potash, through private initiative and under government auspices, had been so great that there seemed good ground for expecting the domestic production to reach at least 30,000 tons of actual potash in 1917, or a little over one-tenth of the normal requirement of 250,000 to 300,000 tons. The fact that old stocks of potash had been exhausted and the urgent need of potash for manufacturing purposes had greatly increased, however, still further limited the amount available for use as fertilizer.

Probably one-third of the potash produced in the United States in 1917 was derived from the alkali lakes of Nebraska. A considerable amount was also derived from Searles Lake, Cal. There had been a marked increase during the year in the recovery of potash from distillery slop and other industrial wastes. The amount of potash being recovered from cement mill and blast furnace dust in 1917 was only a small part of the amount recoverable. The U. S. Bureau of Soils stated "that with suitable collecting apparatus the cement mills of the country might produce approximately 70,000 tons of actual potash annually. Slight modifications of operating practice would increase this total to at least 100,000 tons." Some of this dust contains as high as 10 per cent of potash, partly soluble in water, and has been put on the market for direct use in fertilizers. The recovery of potash from blast furnace dust is being attempted by at least one company.

Several plants were engaged in producing potash from kelp in California. The Bureau of Soils completed a $100,000 plant for this purpose during the year at Summerland, Cal. A good grade of potassium sulphate was being made by one company from Utah alunite. Roasted alunite had also been put on the market for use as a fertilizer. Various processes for producing available potash from insoluble feldspars, greensand, and other silicates have been proposed, but little or no potash from this source has been actually put on the market. The commercial success of such processes seems to depend upon the profitable utilization of the byproducts. The untreated silicates have proven of little or no practical value as fertilizer.

A recent act of Congress (S. 2156) defines in detail the method of governmental control of prospecting for potash on public lands and of patenting or renting such lands for the mining of potash, as well as of the distribution and price of the products. An area of about 2500 acres in Searles Lake, estimated to be capable of yielding 5,000,000 tons of potash, is exempted from permit for prospecting or private ownership. It may, however, be rented or operated by the government itself.

Nitrogen. In spite of increased production and export, the price of Chile nitrate of soda rose during the year to an almost prohibitive height (about $100 per ton) from the standpoint of its use as a fertilizer. The situation was such that Congress at its last session provided $10,000,000 to be used at the discretion of the president for purchasing nitrate of soda to be sold to farmers at cost for cash. The purchases of nitrate for this as for other governmental purposes are to be made through the War Industries Board; the distribution to farmers is to be made through the Department of Agriculture.

The first plant for the production of synthetic nitrogen for use in the manufacture of munitions and fertilizer, provided for in the congressional appropriation of $20,000,000, has been located at Sheffield, Ala. The Haber process of producing ammonia and a modification of the Ostwald process of oxidizing ammonia to nitric acid were to be used. This was an important step in the direction of making the United States independent of outside sources of nitrogen compounds as Germany is reported to be at the present time through the domestic production of ammonium sulphate, cyanamid, and synthetic nitric acid.

One-half of the 350,000 tons of combined nitrogen estimated to be annually produced in Germany was probably supplied by ammonium sulphate. The production of ammonium sulphate in the United States increased over 30 per cent during the past year but is still not over 40 per cent of the possible production, which is estimated as 600,000 tons annually. Attempts to convert trade wastes and sewage sludge into available nitrogen fertilizer were meeting with a considerable measure of success. The nitrogen of garbage is made readily available by processing, and experiments with so-called activated sludge indicated that recovery of available nitrogen from this source "has at last been brought within the range of a commercially practicable problem."

There was increased activity in the production of nitrate of potash in India because of the great value of this material as a source of both nitrogen and potash. The supply of cotton-seed meal for use as fertilizer was short in 1917 but the production of blood and tankage was up to the average. There was, however, an increased demand for all these products as feed for live stock.

Phosphoric Acid. Such statistics as were available indicated that the mining of phosphates was more active in northern Africa than in the United States. Both foreign exports and domestic shipments of American phosphates had declined since the war began. The high cost and uncertain supply of raw phosphate and a shortage of sulphuric acid were assigned as causes of the advance in the price of acid phosphate.

In view of the acid phosphate situation it was of great importance from the farmer's standpoint to know that the composting of fine-ground raw phosphate (600 pounds) with sulphur (200 pounds) and fertile soil (200 pounds) to which had been added a small amount of special inoculated soil, as proposed by the New Jersey Experiment Station, seemed to offer a simple practical means of providing at moderate cost the available phosphoric acid so generally needed to stimulate food crop production. The process was very thoroughly tested by the New Jersey Station but it was being coöperatively tested by a number of experiment stations.

Many attempts were made to utilize untreated rock phosphate as a fertilizer with varying success. The New Jersey Station found that buckwheat assimilated the phosphoric acid of raw rock phosphate almost as readily as that of acid phosphate, and that both buckwheat and soy beans readily utilized the insoluble potash of greensand marl. Hence it was suggested that "it might be quite practicable to use ground rock phosphate and greensand marl for the growing of buckwheat and soy beans, and when these are plowed under, the soil would be enriched in available phosphoric acid, available potash, and the nitrogen accumulated by the soy beans."

FICTION. See Article Literature, English and American, and articles on French, German, Italian, Spanish, and Scandinavian literatures.

FIJI ISLANDS. A group of South Pacific islands; a British crown colony. The principal inhabited islands are Viti Levu (4112 square miles), Vanua Levu (2432), Taviuni (217), Kadavu (124), Koro (58), Gau (45), and Ovalau (43). Total area, including the dependency of Rotumah (14), 7435 square miles. Estimated population, December 31, 1915, 159.321 (89,574 natives). Sugar, copra, and fruit (particularly pineapples) are the chief products and exports. Total imports 1915, £880,308 (1910, £870,120); exports, £1,474,192 (£1,005,818). Export of sugar. £1,065,463 (£669,432); copra, £233,759 (£258,914); fruit £120,741 (£47,301). There is no railway. Suva, the capital, has cable communication with Brisbane and with Canada. Revenue, 1915, £273,635 (£211,952 in 1910); expenditure, £282,831 (£236,661). Public debt, December 31, 1915, £49,215. Governor of Fiji and High Commissioner for the Western Pacific, Sir Ernest Bickham Sweet-Escott.

FILTRATION. See Water Works and Water Purification.

FINANCIAL REVIEW. Additional information relating to the financial and commercial developments of the year will be found under the following topics: Agricultural Credit; Banks and Banking; Food Control; Insurance; National Banks; Prices; Tariffs; Taxation; Trusts. See also the article Labor and the references there given, and articles on various countries and States of the United States.

General Conditions. While some new maxima were reached in the various aspects of the business life of the United States during 1917, nevertheless the year was distinctly one of caution and of a tendency to recede from the high levels of 1916. At the opening of the year many businesses were largely dependent upon the continuance of peace, with the result that various efforts then being made to secure a discussion of peace terms had the effect of increasing business caution and raising fears lest a sudden peace should unduly upset the industrial fabric resulting from three years of war in Europe. Diplomatic negotiations rapidly indicated that war with Germany was inevitable so that America's actual entrance into the war caused less disturbance to business than might have been expected in the absence of such ample psychological preparation. Thereafter a dominant feature in the business world was the scarcity of capital and the immense demands of the government to finance the prodigious war expenditures. Uncertainties with reference to the volume of taxation continued until the close of the year and exercised a restraining influence upon business buoyancy. The rapid evolution of the excess profits taxes (see Taxation), with the probability that continuance of the war in 1918 would necessitate still further advances, reduced the business optimism that would otherwise have resulted from the enormous profits which many concerns showed.

Statistics. The most striking feature of the year was the total value of farm products estimated at $21,000,000,000, an increase of 57 per cent over the previous maximum of 1916. Nearly one-half of this was credited to crops and the remainder to animals and animal products. The stock of gold money in the United States on December 1 was $3,040,000,000, an increase of 10 per cent during the year. Money in circulation on the same date equaled $5,085,000,000, an increase of 18 per cent. Total merchandise imports of the year were slightly less than $3,000,000,000 and total exports somewhat more than $6,000,000,000, increases respectively of 24 and 13 per cent over 1916, due, as were in part other new maxima, to higher prices. Gold imports were $694,000,000 an increase of only 1.5 per cent, while gold exports were $395,000,000 or more than double the 1916 amount. Building expenditures in 155 cities, according to *Bradstreet's*, were $706,000,000 for 12 months, a decrease of 29 per cent. Fire losses were $267,000,000, an increase of 15.6 per cent. The unfilled tonnage of the United States Steel Corporation had declined steadily from a maximum of 11,058,000 tons on November 30, 1916, to 9,833,000 tons on December 30, 1917, and to 8,897,000 tons on November 30. The pig-iron production was almost precisely the same in 1916 or slightly over 38,000,000 tons for the year. Anthracite coal shipments totaled 78,156,000 tons, an increase of 16 per cent. Iron ore shipments by lake were 62,500,000, a decrease of 3.4 per cent. Gross earnings of railways for the year were $4,188,000,000, a gain of $451,000,000, or 12 per cent over 1916. Net earnings were $1,022,000,000, a decrease of nearly $92,000,000. Operating expenses were $2,943,000,000, an increase of $487,000,000 over 1916. *Bradstreet's* index of commodity prices showed an advance of 105 per cent from August, 1914, to December, 1917; and of 29 per cent from January to December, 1917. The new incorporations of companies each with $1,000,000 capital or over aggregated $3,693,000,000, an increase of $1,024,000,000 over 1916 and of $2,267,000,000 over 1915. The total for all companies with $100,000 or more capital was $4,609,000, an increase of $1,080,000,000 over 1916 and of $2,547,000,000 over 1915.

Stocks and Bonds. The dominant characteristics of stock exchange activities during the year was the almost continuous recession in prices and repeated waves of liquidation. The extraordinary stimulation of American trade during the two years preceding had pushed the market prices to rather high levels toward the close of 1916. Consequently at the very opening of the year there were signs of hesitation and reduced optimism. Many of the maximum prices of the year were those of January 2. The President's address shortly thereafter and the investigation of a reported "leak" of financial information involving government officers both produced distinct slumps in prices. The recall of Ambassador Gerard caused a sharp recovery early in February. War appearing inevitable the prices of certain war stocks including steel, locomotive, and metal concerns moved up rapidly. This movement, however, was abruptly checked by the determination of the government to adopt a policy of price-fixing and to purchase its supplies at substantial reductions from existing market prices. This same backward and forward movement continued to the close of the year, a general downward tendency in the prices of both stocks and bonds being only occasionally checked by favorable war news. The most spectacular single movement of the year was the very sharp advance of railroad stocks in December following the announcement of the government's policy of railroad management. In sympathy with the advance in railroad shares other securities swung upward though less decisively. A depressing effect from August to December was the growing consciousness that war expenditures would involve heavy taxation. So weak was the support of prices and so amazing the continued shrinkage of values that on November 1, the New York stock exchange authorities took action to check short selling. The advisability of closing the exchange or of fixing minimum prices was discussed. It was decided, however, to keep a close daily account of borrowed stocks in order to prevent excessive short selling and deliberate drives against particular stocks. Another factor was the ruling of the Federal tax authorities that in order to secure the advantage of reductions in security values as deduction from income and profits taxes such losses must have been actually experienced. This required investment firms to make many sales especially of bonds, which otherwise they would have avoided. This influence, however, was removed in December by the ruling of Secretary McAdoo permitting investment firms to register the amount of depreciation of securities as measured in actual market values.

The combined monthly averages for 25 railroad stocks showed a decline in every month of the year except March and December. Their averages for January showed high of 81.22 and low of 77.86. There was, except for March, steady decline to a November high of 60.13 on the first day of the month and a low of 55.71 on the eighth. The low point of the year was 52.06 reached on December 20. The high point for that month was December 28 with an average of 60.67. A somewhat similar movement was made by the industrials except that both March and May recorded advances over the preceding months for 25 industrials. The high point of the year was 99.74 on January 4, and the low was 62.81 on December 20. The recovery in December brought the average to 72.40 on December 31. The average of the 50 stock prices reach a maximum for the year of 89.48 on January 20 but fell to a minimum of 74.24 on December 20. Total transactions for the year were 184,536,000 shares of stock. This was less than the corresponding figure of 1916, but exceeded the corresponding figures for the six years 1910 to 1915 inclusive.

The bond market was not strong even during the first half of the year and after the flotation of the first Liberty Loan was manifestly weak. While there were thus many ups and downs until about August 1, from then until December 20 there was almost continuous and precipitate recession of prices. A very important factor in the cheapening of bonds was the scarcity of fresh capital, the consequent rise in interest rates, and the high prices of commodities in general. The pre-war dollar became worth only 60 cents and persons depending on income from investments sought higher returns than their bonds had previously given. Total bond transactions were $1,052,347,000, slightly less than the 1916 total, but greater than in any of the preceding six years.

Gold Movements. A fundamental indication of the course of international trade is the international movement of gold. Upon the outbreak of the war the fact that the United States was a creditor nation and that all belligerent nations and even some neutrals were extremely desirous of increasing their gold holdings resulted in enormous exports of gold from the United States. With the increasing purchases of both belligerents and neutrals in American markets this movement was reversed in 1915. A steady stream of gold found its way to America throughout 1916 and 1917 with momentous consequences to credit, business, and prices. It was estimated that during 1915 and 1916 the United States imported $1,036,554,000 of gold. During this period it exported $174,226,000 leaving a net balance of $826,328,000 imported. During the first quarter of 1917 the net importations were about $270,000,000, so that by April, 1917, there had been added to the gold stock of the United States about $1,130,000,000 since the outbreak of the war. This represented only one phase of the tremendous effort of foreign countries, especially England and France, to pay for their purchases of American goods. During this same period at least $2,000,000,000 worth of American securities previously held abroad were resold to this country. In addition loans and credits extended to belligerents and neutrals aggregated more than $2,500,000,000. Thus up to the close of March, 1917, the net balance of trade in favor of the United States aggregated about $6,000,000,000.

The enormous expansion of the gold basis resulted in an even greater expansion of American credit facilities. Thus on June 30, 1914, the gold in United States banks amounted to $913,000,000 upon which rested $21,351,000,000 of credit in the form of deposits. On June 30, 1916, on $1,140,000,000 of gold there were based $28,250,000,000 of deposits. In these two years the ratio of gold to deposits declined from 4.27 to 4.02 per cent according to the computation of the National Bank of Commerce in New York. This expansion of credit facilities made the New York money market easy and greatly stimulated industrial expansion and stock exchange transactions. At the same time, however, in connection with the unusual character of war demands it threatened to bring about abnormally high prices necessitating advances in wages; it was also favorable to a general dislocation of the economic organization which indicated an unusually serious disturbance of business upon the conclusion of peace. It was pointed out by many observers that American high prices would make the country an excellent market to sell in but an unfavorable one to buy in when the war was over. The scanty holdings of gold abroad would result in relatively lower prices which would stimulate foreign producers in making exports to America and check their purchases here. Consequently a reversal in the direction of the gold stream not only was to be expected but would be accompanied by a lowering of prices, a lowering of wages, and extensive economic readjustment. So important, however, were the gold holdings for the existing credit fabric that in September the government forbade its exportation except under special license; nor were banks permitted to segregate or set aside quantities of gold marked for special customers or uses when peace is restored.

All foreign countries were deeply affected by the gold movement. Belligerents sought to retain possession of their gold holdings even allowing exchange rates to become distinctly unfavorable before shipping gold. In all cases also the decline in the gold holdings was accompanied by a considerable enlargement of paper money, such issues, as a rule, greatly exceeding the gold withdrawal. In most neutral countries the effects were similar to those in the United States, that is, gold imports, credit expansion, trade stimulation, and higher prices. Consequently in Scandinavian countries, in Holland, in Spain, and elsewhere steps were taken to discourage the importation of gold. An incidental effect of these actions was the decline in the rate of American exchange so that the American dollar was at a discount abroad. According to the National Bank of Commerce the percentage additions to the gold holdings of leading nations between January 1, 1914, and January 1, 1917, were as follows: Japan, 38 per cent; United States, 49 per cent; South America, 8 per cent; Spain 96 per cent; Switzerland, 83 per cent; Denmark, 50 per cent; Norway, 53 per cent; Sweden, 89 per cent; Holland, 200 per cent. On the other hand, there was a falling off of the indicated percentages in the following countries: Germany, 2 per cent; Italy, 9 per cent; Russia, 12 per cent; France, 14 per cent; Great Britain, 35 per cent; Austria, 49 per cent; and Turkey, 50 per cent.

New Industries. Not the least important effect of the war was the stimulation of new industries in the United States. The extensive variety of these could as yet be only roughly estimated. No doubt the most extensive changes occurred in the general field of chemicals, drugs, and dyes (see CHEMISTRY, INDUSTRIAL). Previous to the war the imports of these articles from Germany amounted to many millions of dollars. Whereas coal-tar colors were then being produced in this country in some half dozen establishments producing 3300 tons of coal-tar colors primarily from intermediates from Germany, in 1917 not fewer than 150 firms had entered this industry and the product was sufficient to supply the textile, leather, paper, ink, paint, varnish, feather, fur, wood-working, shoe dressing, and many other industries employing at least 2,000,000 workers with total products valued at several billions of dollars. In addition under the leadership of Thomas A. Edison an extensive supply of carbolic acid, benzol, and aniline was produced. German potash was previously imported to the extent of over $17,000,000 a year. The war however developed an extensive industry in the extraction of potash from kelp or seaweed on both coasts, especially the Pacific. In addition potash was being produced from feldspar and the vast deposits of Utah alunite, as well as from molasses distilleries, gases of blast furnaces and cement mills, and tobacco stems. In 1916 Congress had appropriated $20,000,000 for the development of the nitrogen industry for the benefit of the army and navy. It was estimated that in consequence of these industries the annual production of potash at pre-war prices had risen to $90,000,000 and of nitrogen to $60,000,000. In the same general field was the development of the manufacture of prussiates; of oxalic acid, of which we previously imported 4000 tons per year; of carbonate, chloride, and dioxide derivatives of barite, previously imported to the amount of 90,000 tons worth $500,000 per year; Russian petrolatum was improved from American sources. Here also should be mentioned photographic paper and photographic supplies; curved watch faces; improved mouth pieces for cornets and other horns; small musical instruments; laboratory utensils, apparatus, and machinery; optical glasses; ichthyol, a pharmaceutical drug formerly imported from Austria; the widely used aspirin; the celebrated salvarsan; and multitudes of other drugs and chemicals. The authorized capital of firms organized between January 1, 1915, and September 1, 1917, for the manufacture of drugs, chemicals, and dyes was over $300,000,000; the total investment for the calendar year 1917 was estimated at over $75,000,000. At least a score of firms had capital of $1,000,000 or more each. In consequence the exports of chemicals, drugs, and dyes increased from $27,000,000 in 1914 to approximately $185,000,000 in 1917. In the three months ending with September America exported $1,173,000 of dyes to 21 countries previously supplied by Germany. Other industries due primarily to the shutting off of German supplies are the toy industry, the mica industry, and the porcelain industry. A considerable business also has developed in the manufacture of imitation Turkish rugs; fine gloves and other leather products; while the fur industry has taken on new form and extent.

At Perth Amboy was constructed a large smelter for the refinement of Bolivian tin, previously imported from Europe. In several places the production of bromine was begun. Refined wool's grease of lanolin previously imported in large amounts for salves, ointments, and emulsions and unrefined wool's grease for use in cordage factories and tanneries previously imported to the extent of thousands of tons were produced in this country. The war gave a tremendous impetus to the steel industry and all allied industries. The aëroplane industry grew from rudimentary beginnings to an investment of scores of millions and brought with it a considerable group of small contributory industries. Likewise the munitions industry. During the fiscal year 1917 America exported $1,240,000,000 of explosives. This industry also gave birth to many contributory industries. The rubber industry expanded apace, while shipbuilding became so important that not less than $350,000,000 were invested in it from the beginning of the war to the close of 1917.

Foreign Exchanges. Both sterling and Paris exchange remained nearly normal throughout the entire year, this being due to the close financial relations of the United States with these countries and to the especial efforts of English and French governments and bankers to maintain their credits of this country. American advances to the Allies being spent entirely in this country served to maintain the balance of trade. On the other hand, bills on Rome declined, especially following the reverses of the Italian army, while the Russian revolution caused a spectacular drop in the exchange value of the ruble. Thus in January Roman exchange (par, 5.18 lire equal $1) was 6.86 l. equal to $1 and in November 8.97 l. equal to $1. The Russian ruble normally worth 51.2 cents showed a maximum value for the year of 29.95 cents in January and a low record of 11.25 cents in September. On the other hand, exchange with neutral European countries showed new high records especially bills on Amsterdam, Zurich, Copenhagen, and Madrid. Following the declaration of war against Germany on April 6, bills of exchange on Germany and Austria ceased.

Bank Clearings. Owing to the remarkably high prices bank clearings showed very high totals. For 151 cities the aggregate clearings for the 12 months were $304,399,000,000, an increase of 17.2 per cent over the previous maximum attained in 1916. Of the total, $126,994,000,000 were credited to cities outside New York, which showed an increase of 26.4 per cent over 1916. The clearings for different sections of the country were as follows: New England, $14,847,000,000; Middle States, $201,675,000,000; Western States, $13,066,000,000; Northwestern States, $33,254,000,000; Southwestern States, $18,618,000,000; Southern States, $11,291,000,000; Far Western States, $11,646,000,000. For the principal cities the totals for the year were as follows in millions of dollars: New York, $177,404; Chicago, $24,974; Philadelphia, $17,197; Boston, $12,674; St. Louis, $6967; Pittsburgh, $4021; Kansas City, $7622; San Francisco, $4837; Baltimore, $2226; Detroit, $2749; Cincinnati, $2030; Minneapolis, $1660; Cleveland, $3730; Los Angeles, $1502; New Orleans, $1963; Omaha, $1873; Milwaukee, $1300; Atlanta, $1605; Louisville, $1023; Seattle, $1151.

Canadian clearings likewise showed considerable increases over those of the preceding year. The aggregate throughout the Dominion was $12,257,000,000, as compared with $10,315,000,000 in 1916. The totals for principal cities were as follows in millions of dollars: Montreal, $4188; Toronto, $3004; Winnipeg, $2622.

Building. An important index of industrial conditions is the extent of building operations. As indicated above the aggregate for the year in the United States was $706,810,000, a decline of 29 per cent from the 1916 total. During the first quarter of the year building expenditures totaled $197,000,000, or nearly the same as in the same quarter of 1916. For the second quarter they were $225,319,000, a decrease of 26.6 per cent. For the third quarter they were $164,230,000, a decrease of 38 per cent; and for the fourth quarter they were $120,231,000, a decrease of 46.8 per cent from the same quarter of 1916. The aggregate for the year was less than in any preceding year since 1908 and the decrease was shown throughout the country.

Failures. According to *Dun's Review* the total number of failures in 1917 was 13,855, as compared with 16,993 in 1916, 22,156 in 1915, 13,660 in 1914, and 16,037 in 1913. Of the 1917 failures 3691 were in manufacturing, 9430 among traders, and 734 among agents and producers. The failures in some particular lines showing larger numbers were as follows: Lumber, carpenters, and coopers, 517; clothing and millinery, 535; milling and bakers, 305; groceries, meat, and fish, 3129; general stores, 975; hotels and restaurants, 530; liquors and tobacco, 732; clothing and furnishing, 836; chemicals and drugs, 362. The aggregate liabilities of all commercial failures in 1917 were $182,441,000. This was less than the total in any preceding year since 1906, except 1909. The percentage of business firms failing in different recent years was as follows: 1917, 0.80; 1916, 0.99; 1915, 1.32; 1914, 1.10; 1913, 0.99. Only one year in the last 20 has shown a smaller percentage of failures than 1917, namely, 1906; in 1909 and 1910 the percentage was the same.

Bank suspensions, including other fiduciary corporations, totaled 42, as compared with 50 in 1916 and 133 in 1915. Aggregate liabilities were $18,452,000, as compared with $10,396,000 and $37,223,000 in the two years preceding.

Canada. The total number of commercial failures in Canada was 1097, as compared with 1685 in 1916; 2661 in 1915; 2898 in 1914; and 1719 in 1913. The number was smaller than in any of the last dozen years preceding. Total liabilities were $18,241,000, an amount greatly exceeded in each of the three years immediately preceding, but exceeding those of preceding years. There were no banking failures in Canada.

Trade Control. An important feature of American trade and commerce, as indeed for much of the rest of the world, was the determination of the Federal government to regulate imports and exports as a means of increasing military efficiency. Numerous studies of trade showed that large quantities of American food and cotton were doubtless reaching Germany by way of neighboring neutrals, especially Holland and the Scandinavian countries (see below). It was evidently necessary, in order to bring the greatest amount of economic pressure to bear upon the Central Powers, to cut off these important supplies of fundamental necessities. On July 9, the president issued a proclamation prohibiting the export of foods, grains, meats, steel, and other war materials from the United States except as licensed by the government. This proclamation was issued under the authority of the so-called "Espionage Act" passed June 15. This was "an act to punish interference with the foreign relations, neutrality, or foreign commerce of the United States." One section gave the president authority to control exports even to the extent of establishing an embargo. On August 27 an additional proclamation placed all articles of export, especially to the neighboring neutrals of Germany and her allies under the control of the Exports Administration Board. Special control was given over cotton, sugar, and lumber to all countries. Finally on September 7 on account of great withdrawals of gold by Japan, Mexico, Spain, and South America, a complete gold embargo was established. This policy was further extended by the "Trading With the Enemy Act" of October 5 forbidding either direct or indirect trading with the enemies of the United States and extending the executive powers to include the prohibition of imports. By a proclamation of October 15 the president placed the entire control of both exports and imports in the hands of the War Trade Board, the Secretary of the Treasury, and other governmental authorities especially cognizant of movements of particular commodities. One consequence of these extensive regulations was the narrowing of foreign trade and a reduction in its volume. In carrying out these policies close scrutiny was given to the trade of numerous concerns, and a blacklist similar for the most part to the British blacklist was prepared; this included 1600 South American firms.

As indicated the British Government had previous to our entrance into the war taken numerous steps to control movements of goods to the neighbors of Germany. A final stage in this policy was an order of October 2 prohibiting exports of all kinds to Sweden, Norway, Denmark, and Holland, except printed matter and personal baggage. Other steps in this policy by the Allies was the conjoint action of the United States and Canada and Newfoundland requiring licenses for the exportation of all food supplies. The Federal Export Administrative Board on October 4 placed a ban on the exportation of bunker coal, with the approval of all the Allies. This latter order created extensive alarm among European neutrals as it threatened to paralyze Dutch and Scandinavian trade.

SCANDINAVIAN TRADE. Calculations of the National City Bank published in December showed that American exports from Norway, Sweden, and Denmark for the three years following August 1, 1914, averaged nearly four times the exports in the immediately preceding years. This latter average was less than $40,000,000 per year. For the fiscal year 1915 the exports to these three countries totaled $197,000,000; for 1916, $169,000,000; and for 1917, $184,000,000. Whereas Denmark in 1914 purchased only $15,870.000. in 1915 she purchased $79,824,000; in 1916, $55,872,000: and in the fiscal year 1917, $56,729,000. Similar figures were given for Norway and Sweden. Some of the more striking changes were the following: In 1914 Denmark purchased only $95 worth of corn in the United States; in the three years ending June 30, 1917, she purchased about $9,000,000 worth annually. Her purchases of wheat increased from $845,000 in 1914 to $3,000,000 in 1915; and $2,000,000 in 1916; her copper purchases rose from less than $100,000 in 1914 to over $1,000,000 worth in 1915 and 1916; there were similar large increases for cotton, cottonseed oil, iron and steel, leather manufactures, flour, rye, lard, and bacon. There were similar increases for the same items for Norway and Sweden. With the declaration of war and the placing of an embargo on exports to these countries by the president, shipments of these important war goods to the neighbors of Germany were stopped.

WAR COSTS. *The Wall Street Journal* computed the total outlay of all nations for the first three full years of war, July, 1914, to August, 1917, at 90 billion dollars. The daily cost had reached $117,000,000. The daily cost to Great Britain rose to about $40,000,000 in the winter of 1916-17, but fell off nearly $5,000,000 by mid-summer. The accompanying table gives a convenient summary in thousands of dollars (000's omitted):

Expenditures	*Aggregate*	*Daily in July*
Entente Allies		
United Kingdom	$26,705,000	$35,000
France	16,580,000	18,500
Russia	14,250,000	15,000
Italy	5,050,000	7,000
United States	1.629.000	19,100
Others	3,250,000	5,000
Total	$67,414,000	$99,600
Less advances	7,992,500	22,900
Net total	$59,421,500	$76,700
Teutonic Alliance		
Germany	$19,750,000	$25,000
Austria-Hungary	9,700,000	13,000
Bulgaria and Turkey	1,450,000	2,000
Total	$30,900,000	$40,000
Less advances	600,000	....
Net total	$30,300,000	$40.000
Grand Total		
Entente Allies	$59,421,500	$76.700
Teutonic Allies	30,300,000	40,000
	$89,721,500	$116,700

On the basis of the foregoing figures of daily expenditures in July, 1917, the total for all belligerents must have approximated at least 105 billion dollars by the close of 1917.

AMERICAN WAR FINANCE. The Federal war finance programme was prodigious. Little exact knowledge existed within the first months after the declaration of war of the total disbursements that would be required. Even as late as November 1 estimates were given to the papers that the requirements for the fiscal year 1917-18 would range from 14 billion dollars to 19 billion dollars. The actual appropriations for war purposes made by the 64th Congress, 2nd session, were $1,977,210,000. The appropriations made by the 1st session of the 65th Congress were $16,901,967,000. There were in addition authorized contracts for the fiscal year 1918 calling for $2,511,954,000. The total of these three items is $21,390,731,000. Of this 7 billion dollars was to be lent to the Allies at the rate of

$500,000,000 per month. It was not known even in December how much of these vast appropriations would be actually spent before June, 1918. It did not seem possible in view of the productive capacity of the country for the government to spend the entire appropriation. In December there was much agitation over the delays in production. It was reported that, although the government's programme called for expenditures of one billion dollars in October, only $450,000,000 of goods could be purchased. To secure funds an extensive system of new taxes was authorized (see Taxation) and two liberty loans were put out besides short-term Treasury certificates of indebtedness and the war savings stamps as described below. Acts authorizing the issue of loans were passed on April 24 and September 24; the former called for 7 billion dollars of bonds and the latter for $11,538,945,460 of bonds, certificates, and savings stamps.

First Liberty Loan. In the war revenue act of April 24 Congress had authorized the borrowing of $7,000,000,000, of which 3 billions were to be invested in war bonds of the Allies. On May 14, Secretary of the Treasury McAdoo announced the offering of the first Liberty Loan to consist of $2,000,000,000 of 30-year 3½ per cent bonds. These bonds were absolutely exempted from all Federal and State taxes except the Federal inheritance tax. They were made convertible into the bonds of any subsequent issue at a higher rate of interest. In order to secure subscriptions an organization was perfected with the twelve Federal reserve banks as the central agencies in their respective districts. In addition to the twelve district committees great numbers of sub-committees including one in every city and town, with still other subordinate committees for special classes or groups in each community, were brought into operation. Numerous avenues of publicity were utilized. Subscriptions were closed on June 15 and the bonds dated from that day although not issued until late in the year. Total subscriptions from more than 4,000,000 persons were $3,035,000,000. Since only $2,000,000,000 had been offered the larger applications were reduced. Each reserve district except those centring at Kansas City, Minneapolis, and Atlanta collected subscriptions in excess of their allotment.

The Second Liberty Loan. Subscriptions to the second loan were opened October 1 and closed October 27. The minimum amount authorized was 3 billion dollars with the proviso that one-half of any excess subscriptions would be accepted. The plan called for payment down of 2 per cent, 18 per cent on November 15, 40 per cent on December 15, and 40 per cent on January 15, 1918. The interest rate was 4 per cent, payable semi-annually on November 15 and May 15. The bonds will run for 25 years but are redeemable at the option of the government after 10 years. They are convertible into any subsequent war issue bearing a higher rate of interest within 6 months after such issue is announced. They are exempt from State and local taxation except State inheritance taxes and the "additional" income taxes; such "additional" tax, however, applies only to the interest on holdings of $5000 or more. It was believed that this issue was by these taxes made more attractive to the small investors. The same thorough organization for every State and locality was utilized as in the case of the first liberty loan. There were also numerous advertisements by bill boards, street cars, newspapers, magazines, and circulars; numerous corporations and banking and other institutions generally urged their employees or constituencies to subscribe. Much interest and enthusiasm was also aroused by hundreds of volunteer canvassers and speakers.

The total subscriptions from 9,500,000 persons were $4,617,532,300, so that the actual issue was $3,808,766,150. In every Federal Reserve District the minimum allotment was oversubscribed, the percentage of over-subscription ranging from somewhat less than 4 per cent for Dallas to 62 per cent for Cleveland, 68 per cent for Richmond, and 72 per cent for New York; the average over-subscription was 54 per cent. In determining the allotments it was decided to fill all subscriptions up to and including $50,000 at the full amount; but to allow only 90 per cent of subscriptions between $50,000 and $100,000, but no allowance in this group to be less than $50,000; 75 per cent of subscriptions between $100,000 and $200,000, but no allotment less than $90,000; 60 per cent of subscriptions between $200,000 and $1,000,000, but none less than $150,000; 50 per cent of subscriptions between $1,000,000 and $8,000,000, but no allotment less than $600,000; 41.2 per cent of subscriptions between $8,000,000 and $30,000,000, but not less than $4,000,000; and 40.8152 per cent of a subscription for $50,000,000. Treasury certificates which were outstanding to the amount of $2,320,493,000, due at different dates in November and December, were applicable to purchase of these bonds. In the stock market the 3½ per cent liberty bonds had fluctuated about par with a usually slight discount before the issue of the second series. Thereafter the 3½s fluctuated about 98-99 and the 4s about 97-98.

War Savings Stamps. For the purpose of raising funds and cultivating thrift Congress authorized the sale of war saving stamps in two denominations, 25 cents (thrift stamps) and 5 dollars (war savings stamps). A Thrift Card was furnished having space for 16 stamps; when filled this could be exchanged for a $5 stamp by the payment of 12 cents in December, 1917, or January, 1918; thereafter the cost for 16 stamps advanced one cent per month. These large stamps could be attached to a War Savings Certificate which had spaces for 20 stamps. If this was filled out between December 1, 1917, and January 31, 1918, at a cost of $82.40 the government would redeem the certificate on January 1, 1923, for $100: similarly for later dates. All stamps and certificates mature in five years from date of issue. The difference between $4.12 and $5.00 is the interest on the former sum for five years at 4 per cent compounded quarterly. No one person could hold more than $1000 worth of these certificates, nor purchase more than $100 worth at one time. The stamps were made redeemable at the post office at any time at a lessened rate of interest. To carry out the plan there were appointed six Federal directors giving their entire time to the work, each being in charge of two Federal reserve bank districts. There was a director for each State and further organization reaching to cities, counties, and towns. The national committee was: Frank A. Vanderlip, who resigned the presidency of the National City Bank of New York to serve without pay as chairman of this committee; Mrs. George Bass, Chicago; Henry Ford, Detroit; F. A. Delano, Washington; Eugene Meyer, Jr., New York; and Chas. L. Bayne, Boston.

Treasury Certificates. In order to raise immediate cash largely for the purpose of carrying out the proposed loans to the Allies, the Treasury issued at sixteen different times the varying amounts of temporary certificates of indebtedness. Their total amount was $4,028,698,000; only $690,000,000 issued November 21, bearing 4 per cent interest and due June 25, 1918, were still outstanding at the close of the year. Two small issues on March 31 and October 29 bore 2 per cent interest; 2 issues on April 25 and May 10 bore 3 per cent; 2 on May 25 and June 8 bore 3¼ per cent; 3 issues on August 9, August 28, and September 17 bore 3½ per cent; and 7 other issues, all after September 26, bore 4 per cent. Nearly $2,500,000,000 of these certificates were placed through the Federal reserve banks at New York.

Advance to Allies. The plan of the government included advances to the Allies of $500,000,000 per month. The first advance was of $200,000,000 to Great Britain on April 25. By the close of the year the total advances had reached the sum of $4,236,400,000, distributed as follows: Great Britain, $2,045,000,000; France, $1,285,000,000; Italy, $500,000,000; Russia, $325,000,000, of which $5,000,000 was for the Rumanian government; Belgium, $77,400,000; and Serbia, $4,000,000. These advances were made on the basis of the obligations of foreign governments purchased by the Treasury. Loans were at first made at the rate of 3 per cent per annum, but soon advanced to 3¼ per cent in order to conform to the rates paid by the Treasury on its own certificates of indebtedness (see above paragraph). Following the flotation of the first Liberty Loan the rate on foreign loans was advanced to 3½ per cent; and finally following the issue of the second Liberty Loan the rate was raised to 4¼ per cent.

Preceding our entrance into the war it had been the practice of foreign governments to issue loans in this country; subsequently to our entrance in order to avoid the competition of foreign governments with our own, the policy of making loans to the Allies by the government itself, as indicated in the foregoing paragraph, was adopted. It was estimated that previous to the American declaration of war about $2,500,000,000 of foreign war loans had been floated in this country. The only variation from the new rule was the issue by the British Treasury through the firm of J. P. Morgan and Company of 90-day discount bills. It was planned to issue about $15,000,000 of bills weekly up to a total of not over $150,000,000. In fact the total issued was only $100,000,000; this amount, bearing 6 per cent interest, was outstanding at the close of the year. In addition the same firm acting for the British and French governments sold some of the collateral upon which previous loans had been based and repurchased part of such loans themselves.

Canada. War financing occupied much of public attention in Canada during the year. On February 8 Premier Borden in his budget speech stated that the cost of the war had exceeded all expectations. For the year 1917-18 the estimated military and naval expenditures were put at $433,000,000, compared with $217,000,000 for the preceding year; $166,000,000 for 1915-16, and only $61,000,000 for 1914-15. The loans of the year included the third war loan of $150,000,000 in 5 per cent bonds at 96 issued in March. A loan of $100,000,000 was floated in the United States in July through the firm of J. P. Morgan and Company. This was the only foreign loan floated in the United States after its entrance into the war, and special permission for it was given by Secretary of the Treasury McAdoo. Finally in November the victory loan was put out, 807,361 subscribers asking for $417,000,000. The loan amounted to $400,000,000 in the form of 5½ per cent gold bonds in three series maturing in 1922, 1927, and 1937. The flotation of this immense loan in Canada was an evidence of sound financial conditions; in 1916 two-thirds of the Canadian loans, Dominion and Provincial, had been floated in the United States, whereas in 1917 only slightly more than one-fifth were sold here. In connection with war financing, Canada began early in the year to issue savings stamps and certificates on a plan similar to that adopted previously in Great Britain and later in the United States.

In trade and manufacturing new high points were reached. Exports for 11 months totaled $1,399,000,000, as compared with $961,666,000 and $521,953,000 for similar periods of 1916 and 1915. Imports for this period were $943,500,000, as compared with $698,709,000 and $405,973,000 for the like periods of 1916 and 1915. There was thus a favorable balance of trade of nearly twice that of 1916 and fully three times that of 1915. Crops were fairly abundant and prices high. Shipbuilding rapidly advanced on both coasts. Mineral production was hampered by labor shortage and unrest but the total value of output was $200,000,000, as against $190,646,000 in 1916. Building expenditures declined from $96,000,000 in 1914, and $39,000,000 in 1916, to $35,000,000 in 1917. Various new industries, notably potash, toy-making, and dye manufacture, developed rapidly. The prosperity of the country was attested by the increase in individual deposits in banks from $663,650,000 June 30, 1914, to $1,008,000,000 November 30, 1917. War orders aggregating about $1,812,000,000 were placed in Canada from July, 1914, to December, 1917, of which slightly over $1,000,000,000 were placed by the Imperial Munitions Board. For bank clearings and failures see above paragraphs.

Great Britain. The great financial and commercial strength of Great Britain showed to superior effect amidst the tremendous obstacles of the third year of war. Aggregate war expenditures reached £4,200,000,000 in February. In September the war cost above the normal peace budgets was estimated at five billion pounds sterling ($25,000,000,000) and yet not the slightest feeling of uncertainty had been manifest as to the soundness of the financial structure. This estimate, made by the Select Committee on National Expenditure, showed that advances to Allies had amounted to £1,321,000,000 to September 30. The dead-weight national debt had thus been increased by about £3,500,000,000 and the annual debt charge by over £200,000,000 or a billion dollars. It was estimated that each six months of war would add £750,000,000, exclusive of advances to Allies, to the debt and £45,000,000 to the annual debt charge (interest at 5 per cent and sinking fund

1 per cent). The total war credits for the fiscal year April, 1917, to March, 1918, inclusive, were £2,450,000,000. There were great quantities of Treasury bills outstanding at all times, their volume in December being £1,059,000,000. As elsewhere prices advanced sharply. The London *Economist* estimated the index level of general prices as follows: Average for 1901-5, 2200; September 30, 1916, 4423; September 30, 1917, 5634. As indicated above British purchases in the United States necessitated large loans from the United States government to maintain trade balances. In addition, for the same purpose, British owners of American securities were estimated to have sold $1,750,000,000 of them back to American investors since the war started. The high rates of interest caused British Consols to drop in January to 51¾, their lowest since 1803, while securities in general continued to shrink in market values. The London *Bankers' Magazine* reported that declines in the market values of 387 representative stocks amounted to nearly £158,000,000 for the year and to £771,000,000 since July, 1914. The high level of trade is indicated by total exports for the eleven months ending November 30 of £488,168,000, an increase of 4.6 per cent over the same period of 1916 and 26 per cent above those of 1915. Imports for eleven months were £980,500,000, or 12.2 per cent over the same period of 1916, and greatly exceeding any previous year. Re-exports, however, were only £66,372,000 for 11 months, a decline of 27.6 per cent and much less than any recent year. See Banks and Banking; Labor; Strikes and Lockouts.

Germany. Financial conditions within the Central Powers were largely shrouded in mystery. There were, however, many indications of financial stress, food and clothing shortage, and industrial unrest. The war finances were a prodigious burden. The fifth war loan was reported in April to have produced 12,770,000,000 marks ($3,192,000,000). In February the Reichstag authorized a sixth credit of 15 billion marks and in July a seventh of like amount. The sixth loan was reported to have produced $3,089,000,000, and the seventh $3,156,000,000. This last called out 5,213,000 subscribers, of whom 3,233,000 made subscriptions of $50 or less, and 1,280,000 others subscribed less than $250 each. The total number of subscribers was less than for the fourth and fifth loans and greater reliance was placed on the large banks. The rapid growth of the public interest charge, the almost complete absence of foreign trade, and the concentration of industrial efforts within the narrowest range of military necessities made increasingly difficult the preservation of a sound financial structure. In addition, in July Germany assumed responsibility for war expenditures of Bulgaria and Turkey. Numerous reports indicated increasing food scarcity and the efforts of the authorities to supply fertilizers and seeds and stimulate production. Nevertheless Mr. Hoover reported to President Wilson in May that the Germans could not be starved into surrender. The scarcity of gold and silver gave great concern because of the unfavorable trade balances with neighboring neutrals. The Reichsbank repeated its appeals for gold in any form and the government threatened to demonetize silver if it were not brought out of hiding. Loans were secured from Switzerland and Holland largely, according to report, by threats to cut off their coal supply. The scarcity of clothing necessitated government control and the issue of clothing cards.

Plans for the rehabilitation of the merchant fleet and the recovery of foreign trade made much progress. It was reported that a merchant fleet was under construction; that the government would make generous allowances for vessels lost during the war and heavily subsidized shipping after the war; and that similar steps would be taken with reference to various branches of trade, especially toy-making and dye-manufacture. It was planned also to utilize monopolies of buying under government direction to secure raw materials. See Banks and Banking; Food Control; Strikes and Lockouts.

Japan. Japan was never so prosperous as in 1917. Although nominally a belligerent her trade and manufacturing positions were those of a neutral. She nearly monopolized Oriental trans-Pacific trade and built up a thriving commerce with much of the rest of the world. She sent trade commissions to all important countries, opened new steamship lines to China, Russia, Australia, Africa, North and South America, Europe, India, and the South Sea Islands. Her shipyards were worked at full capacity. Her combined imports and exports showed a value double that of 1914. As compared with 1916 there was an increase of over 50 per cent in exports and of about 20 per cent in imports. There were great advances in commodity prices resulting among other things in numerous industrial disturbances (see Strikes and Lockouts). Some indication of industrial development is given by Japan's importation of cotton from the United States to the amount of 514,000 bales in the fiscal year 1917, as compared with 484,000 bales in 1916 and 337,000 in 1914. Her total exports for fiscal years were: 1917, $130,472,000; 1916, $74,470,000; 1915, $41,517,000.

FINLAND. A grand duchy on the gulfs of Finland and Bothnia, which was conquered by Russia from Sweden, and finally annexed in 1808. Capital, Helsingfors. Consequent upon Russia's revolution and subsequent disruptions, the Finnish papers state that on Friday, November 9, 1917, the Finnish Diet decided, by 106 votes to 90, to inaugurate a régime of complete independence by declaring that as the Provisional Russian government no longer existed the Diet entrusted the government of Finland to a directory of three persons—namely, the magistrate Svinhufvud, privy councillor Gripenberg, and the banker Paasikive. The post of governor-general was declared abolished. At the close of the year it was officially reported from Berlin that after the Russian government announced its willingness to recognize the independence of Finland, the German Emperor charged the imperial chancellor to express in the name of the German government recognition of the Finnish republic to plenipotentiaries of Finland then in Berlin. Chancellor von Hertling received the plenipotentiaries and informed them Germany had recognized Finland. See Russia.

Area and Population. The total area is 373,604 sq. kilometres (144,249 sq. miles), of which 47,829 sq. kms. internal waters. Censussed population, 3,115,197; estimated 1914, 3,269,401. The population was 33 per square kilometre in Nyland (greatest density), and 2 in Uleaborg (the least), and the average density for the country was 9. Evangelicals numbered

3,057,627, Greek Orthodox 52,004, Baptists 4467, Methodists 676, Roman Catholics 423. Speaking Finnish as their native tongue were 2,565,742, Swedish 344,364, Russian 7339, German 1794, Lapp 1660, other tongues 298. Helsingfors had 170,452 inhabitants in 1914, Abo 53,926, Viborg 29,329, Tammerfors 45,213, Nikolaistad 24,430, Björneborg 17,571, Uleaborg 21,605, Kuopio 17,587.

Emigration 1915, 4041; 1914, 6474; 1913, 20,057. Marriages 1914, 18,381; births, 87,577; deaths, 50,680.

PRODUCTION AND COMMERCE. Cereal crops are grown; also roots and forage plants. The leading crops are rye, barley, oats, potatoes. Saw mills and paper manufacture provide the chief industry, and the forests are a great source of wealth, immense quantities of timber being prepared for export; dairy produce is also exported. Iron ore is mined, and pig and bar iron are produced for export. In 1914 the harvest yielded 69,211 hectolitres of wheat, 3,978,946 of rye, 1,521,039 of barley, 6,897,155 of oats, 6,602,533 of potatoes. Revenue from crown forests in 1914, 15,214,272 marks; expenditure, 3,033,313. The principal articles of export are timber, paper and pulp, butter, hides and leather, wooden wares, fish, cotton textiles, iron. The trade by countries of origin and destination, with values in thousands of marks (gold), is shown below for two years:

	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
Germany ..	118,878	6,944	20,937	......
Russia	145,197	384,997	125,457	204,172
U. K.	33,619	4,894	67,499	270
Denmark .	17,616	12,399	7,323	......
Sweden* ..	41,787	163,920	25,889	62,020
France ...	3,486	1,820	14,013	......
Spain	1,491	385	5,671	......
Other	......	......	......	......
Total ...	380,164	578,409	285,180	266,462

* And Norway.

Vessels entered (1914), 8399, of 2,352,282 tons; cleared, 8538, of 2,326,217. Merchant marine (January 1, 1915), 3821 vessels, of 459,306 tons (564 steamers, of 79,172).

COMMUNICATIONS. Railways in operation in 1914, 2506 miles. All but 207 miles of line owned by private capital, but operated by the state lines, are state-owned. Finland has 2765 miles of navigable waterways, of which, with the existing facilities, it is estimated that the freight capacity is about 1,600,000 tons a year. The waterways, as well as the railways, are under the administration of the state.

FINANCE, ETC. The revenue for the year 1915 amounted to 194,207,122 marks ordinary and 2,121,505 extraordinary (3,568,040 from funds); of which 97,176,273 marks was derived from state domains and forests, railways, canals, etc.; 46,295,710 from indirect taxes (customs and excise), 6,808,317 from direct taxes, etc. Expenditure, 161,365,101 marks ordinary and 37,532,550 extraordinary (597,160 for funds); of which 60,497,942 for communications, 18,555,035 for worship and instruction, 14,976,823 for civil administration, 16,164,999 military contribution, 8,029,563 debt charge, 7,147,450 for agriculture, etc., 6,804,113 for commerce and industry, etc. The debt stood January 1, 1916, at 169,368,117 marks.

According to Stockholm telegrams Finland at the close of the year was completely under control of the Socialists, whose representatives were everywhere taking over the central and communal administrations. At the end of the year at Tornea, assisted by Russian soldiers, they commandeered the wheat in possession of the peasants in the district. No disorders were reported. In order to put an end to the disastrous general strike an endeavor was made to arrive at a compromise between the Revolutionary Socialists and the bourgeois parties. For the relations of Finland to the Russian revolution, see RUSSIA, *History*.

FIRE INSURANCE. See INSURANCE.

FIRE PROTECTION. In the year 1917, and especially with the entrance of the United States into the great war, the subject of fire protection loomed larger than ever previously. In Europe there was every effort made by airmen of the hostile armies to attack cities, munition factories, supply depots, and routes of transportation with explosive and incendiary bombs, and correspondingly equal care was manifested in providing suitable defenses. Both in Great Britain and in Germany considerable damage was done, and extensive plants were destroyed by fire, although official statistics as to the extent and nature of these conflagrations naturally were not available, and but little definite knowledge was gained as to their extent and origin. Enough, however, was made public to indicate that fire was an active factor in the waging of war, and that with the increase in the aëroplane equipment, it would figure still larger.

In the United States, the movement for fire prevention and protection continued with increased attention to the conservation of collected food and other supplies. The financial stringency in many cases prevented the increased fire protection by the large cities which might have been expected under normal circumstances and not infrequently the city fire departments were weakened by the draft and enlistment of firemen in the military and naval services of the United States. There were few radical improvements in fire protection apparatus or equipment during the year, and it was believed that adequacy and efficiency were more to be desired than innovations.

AMERICA'S FIRE LOSSES IN 1917. The total fire loss in the United States and Canada during 1917 as recorded in the *Journal of Commerce and Commercial Bulletin* (New York), aggregated $267,273,300, an amount which with the single exception of 1906, the year of the great San Francisco conflagration, was the largest on record, being $36,000,000 in excess of 1916 and over $84,000,000 larger than in 1915.

In 1917, there were 3150 fires which in each instance caused an estimated property destruction of $10,000 or over, as compared with 2857 such fires in 1916 and 3152 in 1915. Classified on the basis of property damage these fires might be grouped as follows: $10,000 to $20,000 loss, 1031; $20,000 to $30,000 loss, 581; $30,000 to $50,000, 427; $50,000 to $75,000, 356; $75,000 to $100,000, 164; $100,000 to $200,000, 340; $200,000 and over, 251.

During the year, 1917, there were 61 fires which resulted in an estimated property damage of $500,000 or over. These were as follows, again quoting the authoritative records of the *Journal of Commerce:*

Location—Description	*Estimated damage*
Kingsland, N. J., munition factory	$12,000,000
Haskell, N. J., powder factory	1,500,000
Troy, N. Y., armory	500,000
Hartford, Conn., department store and others	750,000
Pittsburgh, Pa., several business houses	2,000,000
St. Louis, Mo., baking plant and others	500,000
Pittsburg, Pa., switch, signal, and munition plant	4,200,000
St. Louis, Mo., railroad bridge	500,000
Omaha, Neb., business block	750,000
Durbin, W. Va., tannery	500,000
Louisville, Ky., grain elevator	1,000,000
Detroit, Mich., grain elevator	1,000,000
Asbury Park, N. J., business houses and dwellings	500,000
Wichita Falls, Tex., business blocks	500,000
Minneapolis, Minn., grain elevator	500,000
Simcoe, Ont., canning factory	500,000
Pittsburgh, Pa., metal works	500,000
Erie, Pa., grain elevator	500,000
Chicago, Ill., grain elevator	700,000
Sioux Falls, S. D., grain warehouse	1,000,000
Macon, Mo., railroad station and others	550,000
Lexington, Ky., several business houses	600,000
Atlanta, Ga., dwelling section of city	5,000,000
Fort William, Ont., stove works	500,000
Bowie, La., lumber yards and dwellings	1,000,000
North Butte, Mont., mine property	1,000,000
East St. Louis, Ill., six blocks of dwellings	500,000
Chicago, Ill., moving picture studios	500,000
Harrison, Idaho, business section	500,000
Seneca Falls, N. Y., woolen mills	500,000
Rochester, N. Y., elevator and warehouse	700,000
Drumwright, Okla., oil tanks and dwellings	500,000
Gibson, Ind., freight transfer yards	1,000,000
Drumwright, Okla., oil tanks and contents	750,000
Sumpter, Ore., business section	750,000
Rigand, Que., munition plant	2,000,000
Brooklyn, N. Y., piers and ships	1,000,000
Drumwright, Okla., 17 tanks of oil	2,000,000
Barren Island, N. Y., garbage reduction works	1,000,000
Scranton, Pa., roundhouse and locomotives	500,000
Westwood, Cal., lumber yard and mill	1,100,000
Spooner, Minn., lumber plant	700,000
Beaudette, Minn., lumber yard	500,000
East St. Louis, Ill., hotel and others	500,000
Charles City, Ia., steel and shipbuilding parts plant	500,000
Brooklyn, N. Y., grain storehouses	2,000,000
Kansas City, Mo., stockyards and cattle	750,000
Baltimore, Md., railroad piers and merchandise	8,500,000
Hastings, W. Va., gasoline works	1,000,000
New York, N. Y., wire manufacturing plant	1,100,000
Hume, Cal., lumber mills	500,000
Detroit, Mich., film exchange	500,000
St. Hyacinthe, Que., hospital	600,000
Brooklyn, N. Y., bath houses and others	500,000
Norfolk, Va., tobacco factory	500,000
Brooklyn, N. Y., dry docks, etc	1,000,000
Wheeling, W. Va., department store and others	525,000
Attleboro, Mass., business section	500,000
Halifax, N. S., part of city	2,000,000
Mullens, W. Va., entire town	500,000
Duluth, Minn., sawmill and lumber yard	500,000

The aggregate fire waste of the United States and Canada in the 40 years from 1878 to 1917 inclusive, reached the extraordinary total of $6,480,267,560, showing an annual average property loss of $162,066,689. The accompanying table shows this loss by years, and indicates the general tendency towards increase. This is partly explained by the increased value of the property destroyed, particularly in 1917, but at the same time insurance officials estimated that fully 65 per cent of the loss was preventable.

FIRE LOSSES DURING FORTY YEARS, 1878-1917

1917	$267,273,140	1897	$110,319,650
1916	231,442,995	1896	115,655,500
1915	182,836,200	1895	129,835,700
1914	235,591,350	1894	128,246,400
1913	224,723,350	1893	156,445,875
1912	225,320,900	1892	151,516,000
1911	234,337,250	1891	143,764,000
1910	234,470,650	1890	108,993,700
1909	203,649,200	1889	123,046,800
1908	238,562,250	1888	110,885,600
1907	215,671,250	1887	120,283,000
1906	459,710,000	1886	104,924,700
1905	175,193,800	1885	102,818,700
1904	252,554,050	1884	110,008,600
1903	156,195,700	1883	110,149,000
1902	149,260,850	1882	84,505,000
1901	164,347,450	1881	81,280,000
1900	163,362,250	1880	74,643,400
1899	133,778,200	1879	77,703,700
1898	119,650,500	1878	34,315,900
Total for forty years			$6,480,267,560

It was inevitable during 1917 that there should have been a number of serious and costly fires as a result of the world war. In some cases these were due to accidents and in others arson or hostile intent was plainly evident if not always proved. This was especially true in the munitions plant fires which included those at the Canadian Car and Foundry Company's plant at Kingsland, N. J., involving a loss of $12,000,000; that at the Haskell, N. J., plant of the Du Pont Powder Company causing $1,500,000 loss; that at the munition plant of the Union Switch and Signal Company at Pittsburgh with a loss of $4,200,000; and the fire at the Washburn Wire Works at New York City with a loss of $1,100,000. Naturally the greatest catastrophe of the year was the Halifax explosion and conflagration treated elsewhere in this YEAR BOOK. See HALIFAX DISASTER.

The National Board of Fire Underwriters prepared a table showing that in the nine months of 1917 that the United States was engaged in war, the number of known incendiary fires or those of suspicious origin, totaled more than 50,000. In 11 instances, the damage done equaled or exceeded $1,000,000, the most disastrous conflagration being that of October at the Baltimore piers already referred to. The amount of grain destroyed presumably by incendiaries totaled over $6,000,000; that of piers and other marine properties over $5,000,000; oil and oil products over $6,000,000; and the loss of timber lands and lumber yards also was over $6,000,000. Unquestionably much of this was done in the interest of the enemy.

WAR EFFORTS. The importance of fire protection as a war measure was early realized by the National Board of Fire Underwriters, and their efforts were approved by the national government, which lent special aid in the development of their plans to reduce fire waste. Increased efforts were made to safeguard the national food supply by additional protection for warehouses and grain elevators, and this was in part successful, but at the same time there were too many fires in establishments of this nature, as well as among the heavy oil tanks in the southwestern field. In many places local advisory committees were organized and in some cities the insurance inspectors were made fire marshals, while bureaus of fire prevention were organized under city councils of defense or other official bodies. Many of the board engineers were detailed to one department or other of the national government because of their knowledge of construction or other work, and general attention was aroused as to the importance of protecting adequately the existing food supply as well as making efforts for its increase.

Need of Watchmen. One important development of the year to which the National Board of Fire Underwriters called attention was the necessity of employing proper watchmen around various industrial plants and terminals. The National Board of Fire Underwriters during the year made a series of tests and found that representatives could enter in many cases almost at will, make drawings, and otherwise inspect the property without detection. In the Baltimore fire of October 30, a pier 900 feet long was in charge of but a single watchman in whose hands the safety of vast amounts of military supplies was intrusted. The fire underwriters demanded that watchmen should be picked men of high character and paid adequate salaries and not derelicts hired at random. They should be courageous and physically active, intelligent, and sufficient in number to furnish real protection. They should be armed, and trained in the knowledge of fire alarms, fire prevention, and fire protection.

Safe Occupancy. The report of the Committee on Safety to Life of the National Fire Protection Association, submitted during the year, suggested that the safe occupancy of a building should be based on the capacity of the stairways, as a maximum emptying time of a building is the most essential factor. In the better class of buildings, the number of persons allowed per floor should be in excess of the capacity of the stairs, and the stair enclosures, but in the poorer class of construction or where highly combustible occupancies, only so many persons should be allowed on each floor as could safely escape by the stairs. The report was accepted tentatively and was allowed to go over for the following year for final adoption.

Fire Resistance. A joint committee of the fire protection associations, insurance, engineering, and construction interests prepared a joint report which was presented before the annual meeting of the National Fire Protection Association in Washington, May 8-10, 1917. Mr. Ira H. Woolson of the National Board of Fire Underwriters, an authority on subjects of construction and fire resistance, was chairman of the committee. The various conferences reached an agreement that fire resistance, materials, and construction should be classified in groups based on the degree of protection which they would afford when measured by a fire test. The terms "four-hour protection," "two-hour protection," and "one-hour protection," and so forth were adopted. This report was to receive careful criticism from the various interests involved and would doubtless form the basis of adequate standards to be established for the United States and Canada.

Definitions and Terms. The National Fire Protection Association at the annual meeting in 1917, presented a series of accurate definitions of terms used in fire protection, and recommended that the familiar term "fireproof" be discontinued on account of its erroneous application. In its place, the Committee on Nomenclature recommended the terms "fire-resistive," "incombustible," and "noninflammable," and presented formal and adequate definitions for these terms.

Toledo High Pressure System. The new high-pressure fire protection system for Toledo, Ohio, was put into operation on January 18, 1917. It affords protection to 140 acres of the business district from a special pumping station located on the Maumee River close to the Maumee Bridge. This station contained four electric motor driven fire-stage Allis-Chalmers centrifugal pumps with space for two additional units. Each pump had a capacity of 2000 gallons per minute against a pressure of 300 pounds at about 1500 revolutions per minute. The motors were operated at 550 horsepower each and were operated by current bought by the city. The water was derived from the Maumee River, and the distribution system included 22,500 feet of 10, 12, and 16 inch extra-heavy cast-iron pipe. There were 67 post hydrants each with four independent 3½ inch outlets, with double caps reducing to 2½ inches. The total cost of the station was $190,924.

Boston High Pressure System. Towards the end of the year the National Board of Fire Underwriters issued a report criticizing the city of Boston for its delay in completing and developing the high pressure fire service system. The National Board of Fire Underwriters' Engineer said in his report: "The distribution system is only about half complete; many lines necessary to reliability and adequacy, as originally planned, have not been installed, and the number of hydrants is insufficient; conditions have been slightly improved in these respects by laying a 16-inch main on Bromfield Street and a 20-inch one in South Market, and the two lines to the distribution system from the pumping station have been laid in part."

The report also stated: "It is very generally recognized that the city is in sore need of the additional protection afforded by an adequate and thoroughly reliable high pressure fire system. With a seriously undermanned fire department, due principally to a large number of unfilled vacancies occasioned by the national army draft, and with no provisions made for offsetting a still greater depletion of the fire-fighting force by the granting of increased time off after February 1, 1918, the urgency of an adequate high pressure fire system becomes more strikingly apparent. As it is obviously impossible with the present high prices to provide for the construction of the pumping station building and complete equipment with the small balance of funds available, it is recommended that an additional bond issue be authorized sufficient to provide for the following:

"1. The immediate construction of the station of a capacity of 18,000 gallons per minute, capable of being extended to 24,000 gallons per minute.

"2. The completion of the distribution as a duplex system, and the making of systematic tests by maintaining 300 pounds pressure for 24 hours at least monthly."

Atlanta Conflagration. On May 21, 1917, the city of Atlanta, Ga., experienced a disastrous conflagration, with an estimated total property loss of about $5,500,000, of which $3,500,000 was covered by insurance. About 10,000 people were made homeless and a large number of these were of the poorer classes, whose temporary sustenance involved considerable expense to the city. The street railway system by damage to the trolley wires, feeders, and poles suffered to an amount of approximately $125,000, and the local telephone service incurred a loss of about the same amount. The fire devastated an area of about 300 acres, involving 1938 buildings, of which 47 were brick and 1891 frame. Of these 1573 were dwellings and apartments, 42 mercantile, 351 garages and outhouses, and 8 of miscellaneous occupancies, including churches, schools, special houses, and warehouses. Of the total number of buildings some 80 per cent, or 1682, had shingle roofs.

This fire started in a small frame building at a time when three other fires were raging in three other parts of the city, consequently, the attention of the fire department was somewhat delayed. Embers of the original fire fell on near-by dry roofs, and served to spread the flames, before an organized effort could be made by the firemen to combat the fire. The result was a series of conflagrations quickly developing which extended over a wide area from a quarter to a half mile ahead of the fire department.

This conflagration was in large measure due to the general use of wooden shingled roofs which not only permitted the fire to extend rapidly in the immediate vicinity of the original outbreak, but also made possible the starting of fires by falling embers, blocks away from the original source and from the fire apparatus. Under such conditions it was found practically impossible for any fire department to give adequate protection to a city so built, and the Committee on Fire Prevention of the National Board of Fire Underwriters was able to find few points of criticism that would compare with the main hazard of structure in importance. It referred to the fact that motor apparatus instead of horse equipment was needed under such conditions because of its superiority of covering long distance runs, and it also referred to the value of high pressure of the distribution system, making possible the extensive use of hose lines direct from hydrants. At this fire there was no shortage of pump or boiler equipment, but the entire capacity of the city was in use and had any of the units been out of service or failed during the fire the conditions would have been very serious so that ample reserve in both pump and boiler equipment for such a contingency are recommended.

An interesting point in the report had to do with the dynamiting of buildings in order to stop fire. It says: "The value of dynamiting buildings to prevent spread of fire in this case is questionable. It is not apparent from the ruins that any good resulted from such work done on or near Ponce de Leon Avenue. With the wide street intervening and the narrow face of the fire, the department, together with the military forces, which were doing excellent work at this time, stopped the spread from direct exposure, and the wider spacing of the buildings and the newer roofs were very favorable to the work of preventing spread of flying embers and brands. The fire department is of the opinion that the dynamiting on Hunt Street was of some value, as it allowed buildings to be wet down with direct hose lines which otherwise would have been of insufficient reach."

Baltimore Pier Fire. One of the most serious fires of the year, believed to be of incendiary origin, occurred on the evening of October 29 at piers 8 and 9 of the terminals of the Baltimore and Ohio Railroad at Locust Point, Md. The destruction of these piers together with freight and other property involving a total loss of some $4,000,000 was a serious blow to export trade from the port of Baltimore, but its effects were only temporary, as extra facilities were soon extemporized, and new pier 6 was being completed at the time of the fire. In connection with the loss of the pier, the British steamer *Kerry-Range* was destroyed. It was reported that the fire broke out in several parts simultaneously and that six other explosions were noted.

Munitions Works Fire at London. In Great Britain one of the serious fires of the year occurred on January 19, at a factory in the east of London near the Thames where the refining of explosives was carried on. The explosive works were completely destroyed and neighboring warehouses, factories, and flour mills were set on fire, as well as three rows of small dwellings in the immediate neighborhood. Sixty-nine persons lost their lives, and 400 persons were estimated as injured.

British Fire Losses in 1917. The principal fires in the United Kingdom during the year 1917, according to the London *Times*, involved a loss of £4,066,900, as compared with £3,300,400 in 1916 and £4,205,000 in 1915. This estimate was considered very conservative as it involved only fires where the damage amounted to £1000 or more, and did not always include fires which on account of war conditions may not have been reported. The above figures are of interest in comparison with statistics for the United States, although, of course, the area and the population involved were far less.

Statistics of Fires. The Committee on Statistics and Origin of Fires of the National

STATISTICS OF FIRES IN AMERICAN CITIES, 1916

	Area Sq. Miles	*Population*	*No. of Alarms*	*No. of Fires*	*Confined to Bldg. or Place of Origin*	*Total Loss*	*No. of Fires per 1,000 Pop.*	*Loss per Capita*
New York	314.75	5,602,841	15,394	13,678	13,420	$8,746,404	2.44	$1.56
Chicago	193.5	2,610,000	16,815	13,888	13,649	5,340,209	5.32	2.05
Philadelphia	129.5	1,700,000	5,705	4,721	4,675	2,766,595	2.77	1.63
St. Louis	61.37	810,000	5,084	4,412	4,099	1,645,064	5.45	2.03
Boston	47.34	750,000	4,656	3,471	3,454	2.473,801	4.62	3.30
Cleveland	52.72	680,000	3,238	2,936	....	769,064	4.32	1.13
Baltimore	33.66	610,000	2,044	1,992	1,965	642,162	3.26	1.05
Pittsburgh	40.67	574,000	2,321	2,065	2,026	1,708,526	3.60	2.98
Detroit	72.67	750,000	4,576	3.983	....	1.683,463	5.31	2.24
Buffalo	42.00	470,000	....	2,824	....	1,066,450	4.94	2.27
San Francisco	38.87	460,000	3,370	2,733	2,684	......	5.94	...
Cincinnati	71.98	410,476	2,015	1,747	....	648,336	4.25	1.51
Newark, N. J......	23.5	410,000	1.375	1.185	1,072	1,105.486	2.77	2.70
New Orleans	196.25	370,000	900	900	871	416,524	2.43	1.13
Washington, D. C..	70.	360,000	1.380	1,179	1,116	380,106	3.27	1.06
Los Angeles	384.	550.000	2,392	1,999	1,914	610,682	3.63	1.11

SUMMARY OF FIRES IN VARIOUS CITIES OF THE WORLD OUTSIDE OF THE UNITED STATES, 1916

	Area Sq. Miles	*Population*	*No. of Alarms*	*No. of Fires*	*Confined to Building or Place of Origin*	*Total Loss*	*No. of Fires per 1,000 Pop.*	*Loss per Capita*	*Loss per Fire*
Australia—									
Melbourne	280.	680,000	1982	880	834	......	1.29	...	....
Canada—									
Hamilton	11.10	104,491	447	174	159	$211,248	1.66	2.02	$1,220
London	10.	57,301	222	177	177	68,189	3.09	1.19	385
Montreal	40.5	617,130	2643	1400	...	......	2.27	...	....
Quebec	...	78,710	724	660	...	396,351	.84	5.03	601
St. Johns	2.5	60,000	158	90	90	150,000	1.50	2.50	1,667
Vancouver	16.89	100,000	540	198	192	511,172	1.98	5.11	2,582
Chile—									
Valparaiso	...	240,000	88	86	84	800,000	.35	3.33	9,382
Denmark—									
Copenhagen	70.74	500,700	830	649	641	......	1.30	...	....
England—									
Birkenhead	6.16	142,622	143	137	137	303,070	.96	2.12	2,212
Birmingham	68.12	895,673	934	744	730	618,380	.83	.69	831
Bolton	24.	180,850	64	60	60	667,755	.33	3.69	11,129
Cardiff	12.6	182,280	124	116	115	84,070	.64	.46	725
Lancaster	12.	41,410	14	13	13	8,480	.31	2.05	652
Leeds	5.75	459,000	243	239	239	261,975	.52	.57	1,096
London	117.	4,516,612	5373	3104	...	4,246,710	.69	.94	1,368
Sheffield	39.	477,228	824	302	302	194,380	.63	.41	644
York	5.76	82,282	27	20	...	6,495	.24	.08	325
France—									
Marseilles	23.	600,000	494	484	472	2,872,840	.81	4.79	5,935
Ireland—									
Belfast	25.8	390,000	191	168	...	1,090,205	.43	2.80	6,489
Dublin	12.4	312,000	145	100	99	206,045	.32	.66	2,060
Italy—									
Florence	...	259,239	180	162	...	40,021	.62	.12	247
Milan	...	705,049	873	622	610	244,943	.88	.35	394
Scotland—									
Aberdeen	10.3	163,891	145	120	120	122,085	.73	.74	1,017
Glasgow	20.27	1,055,253	1549	699	...	460,000	.66	.44	658
South Africa—									
Cape Town	...	70,000	217	178	...	78,140	2.54	1.14	433
Switzerland—									
Basel	9.25	137,150	54	73	70	8,384	.53	.06	114
The Netherlands—									
The Hague	16.10	334,060	840	821	321	45,110	.96	.13	140

Board of Fire Underwriters on May 24, 1917, published its usual tables for the leading American and European cities, from which the accompanying material has been compiled. With the great war raging in Europe, it is unnecessary to state that the summary in this field necessarily is incomplete, and that no record has been made of fire destruction due to military activity.

In 1916, twenty-three cities in the United States had a per capita loss in excess of $5.00, Jersey City, N. J., heading the list with $27.71. That local conditions are in part responsible for high losses is shown by the fact that in four cities of the United States, the loss in excess of $5.00 per capita had occurred in three of the five years ended by 1916, and in five other cities, the loss in excess of this amount had taken place in two of the five years.

COMPARATIVE FIRE LOSSES, UNITED STATES

		Population	*Total Loss*	*Per Cap.*
1912—	Whole country.	95,410,503	*206,438,900	2.16
	300 cities	32,326,633	†82,297,386	2.55
1913—	Whole country.	97.163,330	*203.763,550	2.10
	298 cities	33,281,804	†74,876,608	2.25
1914—	Whole country.	98,781,324	*221,439,350	2.24
	298 cities	40,213,280	†93,368,795	2.32
1915—	Whole country.	100,399,318	*172,033,200	1.71
	333 cities.....	35,161,266	†68,386,218	1.94
1916—	Whole country.	102,017,312	*214,530,995	2.10
	329 cities	36,055,568	†79,440,658	2.20

*Estimated. †Actual figures reported.

See the article FORESTRY.

FISH AND FISHERIES. Two reports of the United States Commissioner of Fish and Fisheries appeared in 1917, bringing the subject up to June 30, 1917. In each of these reports the commissioner stated that the work of fish propagation had been carried on to better advantage and with greater success than in the preceding year. The totals are given in the following table; for the separate items the original reports should be consulted.

	Eggs	*Fry*	*Fingerlings, yearlings, and adults*
1916 ..	425,700,794	4,329,300,337	92,261,435
1917 ..	318,939,100	4,757,908,782	82,115,411

The unit cost of fish-cultural operations in 1916 was $117.86 per million fish produced and planted; in 1917 it was $114.46 per million. In 1916 fish were distributed to every State in the Union and to Alaska. In 1917, in addition to this distribution, trout eggs were sent to Japan and to Canada, and a number of species to the Canal Zone. It is worthy of note that while the marine fishes showed an increase in the list of animals hatched and planted there had been for two years a steady decrease in the number of lobsters hatched and set free.

The following table shows the quantity and value of fish landed at Boston and Gloucester in the calendar years 1915 and 1916:

	Pounds	*Value*
Cod, fresh, 1915	34,088,124	$ 888,852
Cod, salted, 1915	10,967,773	384,108
Cod, fresh, 1916	35.993,089	1,218,569
Cod, salted, 1916	7,629,473	338,318
Haddock, fresh, 1915	57,818,050	1,805,452
Haddock, salted, 1915	130,594	2,361
Haddock, fresh, 1916	60,371,496	1,757,382
Haddock, salted, 1916	184,296	4,293
Hake, fresh, 1915	14,589,315	277,470
Hake, salted, 1915	300,625	5,007
Hake, fresh, 1916	13,029,091	334,296
Hake, salted, 1916	148,208	2,944
Pollock, fresh, 1915	12,961,313	249,188
Pollock, salted, 1915	234,640	4,070
Pollock, fresh, 1916	15,502,487	381,578
Pollock, salted, 1916	101,148	2,038
Cusk, fresh, 1915	6,235,801	96,003
Cusk, salted, 1915	94,943	2,347
Cusk, fresh, 1916	6,016,527	118,415
Cusk, salted, 1916	51,770	1,035
Halibut, fresh, 1915	3,584,175	301,787
Halibut, salted, 1915	286,510	21,509
Halibut, fresh, 1916	3,363,521	377,075
Halibut, salted, 1916	95,244	8,510
Mackerel, fresh, 1915	7,344,574	383,016
Mackerel, salted, 1915	3.578,828	231,063
Mackerel, fresh, 1916	10,831,631	627,539
Mackerel, salted, 1916	5,074,718	421,749
Herring, fresh, 1915	4,345,770	89,326
Herring, salted, 1915	8,930,800	186,783
Herring, fresh, 1916	11,410,016	209,305
Herring, salted, 1916	7,223,224	183,344
Swordfish, fresh, 1915	2,238,967	221,559
Swordfish, fresh, 1916	1,772,312	238,279
Tilefish, fresh, 1916	873,142	24,295
Miscellaneous—		
Fresh, 1915	3,874,176	87,980
Salted, 1915	750	36
Fresh, 1916	6,157,997	134,945
Salted, 1916	40	2

In 1915 the crab industry of Maryland and Virginia showed a yield of 50,343,268 pounds, with a value of $981,807; the shad industry in Chesapeake Bay showed a catch of 6,168,669 pounds, with a value of $849,527, while the alewives of the same region yielded 28,621,710 pounds of a value of $297,729. The shad fisheries of the Hudson River yielded in 1915, 68,668 pounds, valued at $8643, and in 1916 only 47,173 pounds, valued at $5465. On the Pacific coast there were landed at Seattle, Wash., from June, 1915, to July, 1916, 20,528,187 pounds of fish, mainly halibut and black cod valued at $1,353,894. The report of the commissioner for 1917 gave in detail the value of the Pacific coast fisheries where an appreciable amount of the total is made up of such items as clams, oysters, turtle, whale products, kelp, etc.

The mussel fisheries of the Mississippi Valley as determined for 1914, and included in the 1916 report, showed a value of shells for the year as $148,960, the pearls found in the shells having a value of $62,902. Attempts were being made to increase the yield of mussels by the artificial inoculation of fish with the glochidia. In 1915 the number of seals in the Alaska herd was estimated at 363,872, in 1916 at 417,281, and tentative figures for 1916 were put at 468,692. In the fiscal year 1917 there were sold at public auction 5400 skins, for which $236,748.50 gross and $165,793.18 net was obtained.

The commission expended much energy in promoting the use of hitherto unused sea products, the most noticeable being the spiny dogfish, which is canned and sold as "grayfish." Experiments showed that it was not in any way inferior either in food value, digestibility, or palatability to the ordinary food fishes, and the demand for 1917 much overran the supply. On the Pacific coast the "black cod" and in fresh waters the "burbot" and the "bowfin," the latter proving to be an especially favorable fish for smoking, are advocated by the commission. Whale meat had been used, especially on the Pacific coast, and had proved very satisfactory. In addition to the use of the flesh for food, thoroughly satisfactory results are reported from experiments on the tanning of shark skins for leather.

It was reported from California that oysters could be purified from adherent bacteria by treating the beds with hypochlorite of calcium.

The work of the International Council for the Exploration of the Sea was stopped by the European war, and some of the most important of its results have been collected by Alexander Meek into a book with the title *The Migrations of Fish*. The British Marine Station at Port Erin reported that plaice hatched in 1914 were sexually mature in 1917, and the second generation of young fish reared in captivity were then passing through the hatching boxes. See ALASKA.

FISK UNIVERSITY. A co-educational institution for the education of negroes at Nashville, Tenn. In the fall of 1917 there were 445 students in all departments and 55 members of the faculty. Volumes in the library numbered 11,865. Productive funds amounted to $251,087.55 and the income therefrom in 1917 was $14,205.91. In 1917 a Rehabilitation Fund of $150,000 was received, largely from the General Education Board and the Carnegie Foundation. Fisk University was founded in 1866. President, Fayette Avery McKenzie, Ph.D., LL.D.

FITZSIMMONS, ROBERT. The former heavyweight champion died on October 22, 1917. He was born at Helston, Cornwall, Wales, on June 4, 1862. While he was a youngster his family removed to New Zealand and he was apprenticed to a blacksmith, from which trade he developed his wonderful physique. While Fitzsimmons stood 5 feet 11¾ inches tall, his legs were thin and tapering, although muscular and serviceable. He was a middleweight from the hips down, but a heavyweight from the waist to the neck. His arms were long and sinewy and he had a pair of hands that were never excelled in the ring for their size. After boxing with indifferent success in Australia he came to America in 1890. He won the heavyweight title from Corbett at Carson City, Nev., on March 17, 1897, winning by a knockout in the fourteenth round. He lost the title to Jeffries by a knockout in the eleventh round at Coney Island on June 9, 1899. He lost the light heavyweight title to "Philadelphia Jack" O'Brien on December 20, 1905, when he was 43 years of age. Despite his age he continued to appear in the ring with mediocre success. His last attempt to appear was frustrated by the Boxing Commission of New York State.

FLANDERS. Formerly a territory consisting of what are now the Belgian provinces of East Flanders and West Flanders, the southern part of the Dutch province of Zeeland, and a small portion of northeastern France. The name is still applied to this region and particularly, in the great war, to West Flanders. The entire Belgian coast line is in West Flanders. The province of East Flanders has an area of 1158 square miles, with a population at the census of December 31, 1910, of 1,120,335; West Flanders, 1249 square miles, population 874,135. At the end of 1912, the provinces had an estimated population of 1,134,079 and 884,777 respectively. The capital of East Flanders is Ghent (Gand), with (1910) 167,477 inhabitants; including suburbs, 211,519. The capital of West Flanders is Bruges, with (1910) 53,635 inhabitants. Other towns in East Flanders are: Saint-Nicolas, with about 35,000 inhabitants in 1910; Lokeren, 23,000; Renaix, 22,000; Eecloo, 14,000; Grammont, 13,000; Termonde (Dendermonde), 10,000; Oudenarde (Audenarde), 7000; Langemarcq, 5000. In West Flanders occurred some of the most violent fighting of the great war. Towns in that province include: Ostend (Ostende), 43,000; Courtrai, 36,000; Roulers, 26,000; Menin, 19,000; Ypres, 17,000; Thielt, 12,000; Poperinghe, 11,000; Furnes, 7000; Nieuport; Zeebrugge; Dixmude. See WAR OF THE NATIONS.

FLAX. For several years before the European war the world's annual production of linseed ranged from about 100,000,000 to 133,000,000 bushels, and that of fibre from 1,000,000 to 2,000,000 pounds. At the end of 1917 data relative to this production were very incomplete. Argentina, the leading linseed growing country of the world, produced in the season of 1916-17 only 4,314,000 bushels, or about 10 per cent of a normal crop. The area devoted to the crop of 1917-18 was estimated at 3,308,727 acres and the yield at 41,653,000 bushels. The production of British India was placed at about 22,000,000 bushels, or about 9 per cent greater than the preceding year. Canada reported a yield of 7,418,000 bushels, valued at approximately $14,000,000, the quality being rated at 67 per cent of perfect.

The 1917 crop of the United States, as estimated by the Department of Agriculture, amounted to 8,473,000 bushels, or nearly 10,000,000 bushels under the 5-year average of 1911-15. The area, 1,809,000 acres, was 335,000 acres greater than that of the year before, although 377,000 acres under the 5-year average, but the average yield per acre was only 4.7 or 5 bushels less than in 1916 and 3.8 bushels less than the 5-year average. The average farm value on December 1, 1917, was $2.97 per bushel, which constituted a record price and brought the total value of the crop to $25,148,000, as compared with $35,541,000 in 1916, when the corresponding bushel value was $2.49. Since the outbreak of the European war choice flax fibre has been quoted as high as $700 per ton on some of the principal fibre markets. The war had made a great demand for the fibre for aëroplanes, and special measures were adopted to stimulate its production in Ireland. The crop was placed under governmental control. See AGRICULTURE.

FLIES. See ENTOMOLOGY.

FLOKITE. See MINERALOGY.

FLOOD CONTROL. See DRAINAGE.

FLOOD PREVENTION. With the exception of the developments in the State of Ohio referred to in a succeeding paragraph and the improvement of the banks of the Mississippi River in accordance with plans previously developed, there was little of novelty or progress in works aimed at the prevention of flood damage. In several instances where misfortunes due to this cause had occurred in previous years, means were taken to straighten channels, strengthen dams, and remove obstructions.

MIAMI RIVER CONSERVANCY. This project for the flood protection of the Miami River Valley in Ohio, advanced during the year and on May 9, there was filed a complete appraisement roll of the Miami Conservancy District in the Conservancy Court, representing the work of 21 months. The total tax levy for the project was $27,700,000 and the estimated cost was $24,000,000 for which bonds to the amount of $25,000,000 were to be issued. Later in the year, an issue of $10,000,000 five and a half per cent bonds was placed on the market as an initial step in the financing of the project. As outlined in the YEAR BOOK for 1916, the work to be performed was divided into a number of contracts including five dams, road construction, levee building, river channeling and excavation, revetments, retaining walls, etc. The great bulk of the work was in earth-moving and concrete construction, the latter consisting of monolithic concrete revetments and flexible-slab revetments, as well as various outlet conduits and of course, the dams themselves. On November 15, bids, which in all cases were informal and conditional on prices of labor, materials, and the attitude of the national government as regards such improvements, were opened. Accordingly, all were rejected except for one contract which involved clearing soil, stripping, and the construction of embankment in levees. The Conservancy District decided to begin the work with its own forces at least, impending a change in industrial conditions.

SCIOTO RIVER IMPROVEMENT. On November 13, bids were received by the city of Columbus, Ohio, for the $1,900,000 river channel widening improvement. The lowest bid received was approximately 72 per cent above the estimated cost, and was rejected. The service director at the time asserted that efforts would be made to modify the conditions by decreasing the yardage of excavation from the channel and making cheaper construction below the water line for the concrete revetments at curves in the channel. Such changes, it was stated, would eliminate the security from flood danger, but not seriously. The Columbus channel widening, it was asserted, would not entirely remove the danger to the town. An essential element was a retarding basin above the city for which a dam had been designed. This scheme was disapproved by the Conservancy Court at Columbus, on the ground that it was not shown that the Dublin Basin was essential to a scheme making Columbus safe from floods, but it was the opinion of most engineers that the dam was necessary and that its design was one of the most ingenious solutions that could be provided for a combined storage and retarding basin. This dam, which is discussed elsewhere (see

Dams), was notable for its eighty feet of circular weir and its system of storage control valves. The plan was that small floods backing up in the lower part of the reservoir would be taken care of by the small outlet openings, while the large floods reaching to the level of the circular weir would be discharged so as to overflow the farmed lower levels of the valley.

Protection of Paris. The technical journals in 1917 contained interesting discussions of the various plans that had been proposed following the high water on January, 1910, in the River Seine, which caused such serious damage. This flood of 1910 was the most serious since 1658 and an engineers commission appointed on February 10 of that year, presented a preliminary report, but only a few of the minor protections recommended were carried out and the great majority had not been done by 1917. On July 16, 1914, the Conseil Générale des Ponts et Chaussees gave its approval to definite preliminary work and on March 11, 1915, plans were deposited for saving the capital from floods. On July 13. 1916, the government brought forward the proposal for a law having the same object, and a commission for public works of the Chamber of Deputies discussed the two proposals that were made for the improvement, rendering a detailed report which was published at the end of 1916. The commission approved the government proposal, which in the main embodied the recommendations of the commission of 1910 and gave certain details as to the straightening of the river, the reconstruction of the bridges, certain changes in dams, and the construction of a new discharging channel in addition to deepening the river bed. Finally the various proposals were developed into a plan endorsed by the government and the city of Paris which in 1917 it was decided to have declared a public utility.

It was also planned to increase the depth of the Seine which would involve the straightening of the foundations of some of the larger bridges and doing away with the existing barrages at Marly and Bezons, replacing the former by a new structure with two passages each twenty-six miles wide. The improvement also involved the adjustment of the width of the river so as to make the flow regular and prevent obstruction which would involve the excavation of some portions of the banks and the removal of islands. The protection of Paris was early considered in connection with the Marne deviation scheme which involved the improvement of inland navigation and would cost some 261,000,000 of francs. In fact the entire development, it was believed, was being considered in connection with increased navigation by which the whole of the Seine between Rouen and Paris would be deepened so as to permit the passage of vessels drawing 14 ft. 9 in. instead of the present limit of about 10 ft. 6 in. No work was put under way during the year, but discussion was active in connection with the work which would be one of the largest internal improvements to be executed in France. An interesting summary of this work was printed in the *Engineer*, July 6, 1917.

FLORIDA. Population. The population of the State in 1910 was 752,619, and on July 1, 1917, it was estimated at 916,185.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	925,000	13,875,000	$19,425,000
	1916	820,000	12,300,000	11,070,000
Oats	1917	55,000	770,000	775,000
	1916	60,000	900,000	639,000
Rice	1917	800	21,000	41,000
	1916	700	18,000	14,000
Potatoes ..	1917	25,000	2,275,000	4,664,000
	1916	18,000	1,332,000	2,664,000
Hay	1917	100,000	*a* 110,000	2,002,000
	1916	75,000	94,000	1,504,000
Tobacco ...	1917	3,100	*b* 3,410,000	1,944,000
	1916	2,500	3,025,000	908,000
Cotton	1917	183,000	*c* 40,000	10,100,000
	1916	191,000	41,000	6,425,000

a Tons. *b* Pounds. *c* Bales of 500 pounds gross weight.

Mineral Production. The only important mineral production in the State is phosphate rock. During 1915 this industry was in poor condition, improving slightly in 1916. Shortly after the outbreak of the war in Europe, the phosphate mining companies curtailed their production very materially, or suspended mining altogether. Production in 1916 was less than two-thirds that in 1913, the year before the war. The production in 1915 was 1,358,611 long tons, valued at $3,762,239, and in 1916 1,515,845 long tons, valued at $4,170,165. This constituted more than 76 per cent of the entire production of the United States in 1916.

Transportation. The total mileage of main line in the State was, on June 30, 1916, 3833. The lines having the longest mileage were:

Atlantic Coast line, 947; Seaboard Air Line, 928; Florida East Coast, 522; Louisville and Nashville, 216.

Finance. The report of the state treasurer for the fiscal year of 1917 showed a balance at the beginning of the year of $1,077,710. The receipts during the year amounted to $4,922,028 and the disbursements were $4,935,929, leaving a balance on hand at the end of the fiscal year of $1,063,808. The public debt consisted entirely of refunded bonds amounting to $601,567.

Education. The total school population of the State in 1916 was 302,028; of these 183,607 were white and 118,421 negroes. There were 2099 white schools and 817 negro schools. The total enrollment in the white schools was 135,883 and in the negro schools 62,482. The average daily attendance in white schools was 98,847, and in the negro schools 45,572. The total number of teachers was 5865 of which 4880 were white and 1385 colored. The total expenditure for school purposes was $3,302,567, of this $3,054,977 was spent for the maintenance of white schools and $247,590 for colored schools. The average monthly salary paid to white teachers was $69.78.

Charities and Corrections. The charitable and correctional institutions in the State include the Florida Hospital for the Insane at Chattahoochee, the School for the Deaf and Blind at St. Augustine, the Florida Industrial School for Boys at Marianna, the State Prison Farm at Raiford, and the Industrial School for Girls.

Politics and Government. The Seminole Indians in the State were, for the first time, assigned a reservation by the legislature. These Indians, who are a survival of the original tribe, have for many years been without a definite assignment of land. By the action of the legislature, they were granted an area of 100,000 acres near the Ten Thousand Islands. Industrial schools are to be established by the government, and the Indians are to be assisted in agriculture, raising of live stock, and other methods of self support. The city of Moorehaven claimed the distinction of being the first city in the South to elect a woman as mayor. A majority of votes elected Marion N. Horwitz to this office.

LEGISLATION. The legislature was in session in 1917, but passed no measures other than of local interest and importance.

STATE OFFICERS. Governor, Sidney J. Catts; Secretary of State, H. Clay Crawford; Attorney-General, Van C. Swearingen; Comptroller, Ernest Amos; State Treasurer, J. C. Luning; Superintendent Public Instruction, W. N. Sheats; Commissioner of Agriculture, W. A. McRae; State Auditor, J. Will Yon; Adjutant General, J. B. Christian—all Democrats. Catts, a Democrat, elected on Prohibition ticket.

JUDICIARY. Supreme Court: R. F. Taylor, J. B. Whitfield, W. H. Ellis, J. B. Browne, and Thomas F. West; Clerk, G. T. Whitfield.

STATE LEGISLATURE. Both houses are Democratic.

FLORIDA, UNIVERSITY OF. A State educational institution located at Gainesville, Fla. In the fall of 1917 there were 329 students in all departments and 60 members of the faculty. About 200 students left to enter national service in 1917. Volumes in the library numbered 30,000. Productive funds in 1917 amounted to $193,800, and income from these funds was nearly $10,000. There was received also an appropriation from the State of $82,344 and a State appropriation of $30,000 for the Agricultural Experiment Station. The Lever Fund brought in revenue amounting to $44,597. Charles Hecker, Ph.D., became professor of industrial chemistry. J. L. McGhee, Ph.D., succeeded E. R. Flint as head of the chemistry department. A three-year course in law was substituted for a previous two-year course, and Earl C. Arnold became an additional professor in the College of Law. A. L. Buser was elected athletic coach and physical director. The University of Florida was founded in 1905. President, A. A. Murphree, LL.D.

FLOUR. See AGRICULTURE.

FLOUR MILLING REGULATION. See AGRICULTURE; FOOD AND NUTRITION; WHEAT.

FOOD. See AGRICULTURAL EXTENSION; AGRICULTURAL LEGISLATION; AGRICULTURE; FOOD AND NUTRITION.

FOOD ADMINISTRATION. See AGRICULTURAL LEGISLATION; UNITED STATES AND THE WAR.

FOOD AND NUTRITION. The prolongation and ever-widening scope of the war made the food supply a world problem of the first magnitude. Despite unprecedented efforts to stimulate production, as noted elsewhere (see AGRICULTURE, AGRICULTURAL LEGISLATION, FOOD CONTROL, ETC.), and even greater efforts to conserve and equitably distribute available supplies, conditions steadily grew more serious in the belligerent countries, decidedly more grave for many neutral nations, and affected in some degree practically every civilized community on the globe.

FOOD REGULATION IN THE UNITED STATES. Upon the entrance of the United States into the war, it was realized that one of its most important services would be the supplying of food to its Allies, even though this would involve a diminution of its own stores, demanding the closest economy and coöperation of the entire nation. Efforts were promptly begun to enlarge Federal authority as to food control, but neither the Food Production Act (see AGRICULTURE) nor the Food Control Act became law until August 10, 1917. See FOOD CONTROL.

In the administration of the act great efforts were made to secure voluntary coöperation. Early in July enrollment of consumers in a food-saving campaign was begun, and in November a house-to-house canvass was made. It was estimated that nearly ten million signatures were obtained to a food pledge promising coöperation with the Food Administration so far as practicable. Display membership cards and buttons became a common sight, and a house uniform for members was also authorized.

Efforts at food conservation in the home were directed primarily toward the saving of wheat, meat (especially beef, mutton, and pork), milk, fats, and sugar. The use of substitutes for these foods was encouraged, notably corn and oat products, fish, vegetables, and home-grown and bulky foodstuffs generally. The reduction of waste was also emphasized.

Hotels, restaurants, dining-cars, boarding-houses, and other food-serving agencies were also quite widely enlisted in the campaign. In such establishments the serving of elaborate table d'hôte meals was discouraged, and steps taken quite commonly to observe "meatless Tuesdays" and "wheatless Wednesdays." Considerable savings of the staple foodstuffs were reported.

In addition to the voluntary campaign, many stringent regulations went into effect, though necessarily quite late in the year. On August 14 the president issued a proclamation requiring elevator operators and millers of wheat and rye to obtain licenses. Two days later the Food Administration Grain Corporation was chartered under government control, to act as its agent in its wheat purchases, sales, and accounting. Sales to the Allies, as well as supplies to the army and navy, were centralized and coördinated in this way. A basic price of $2.20 per bushel for No. 1 northern spring wheat or its equivalent, at Chicago, was adopted for purchases by the government of the 1917 crop.

In September licenses were required of importers and manufacturers of sugar and its by-products. An International Sugar Committee was also formed to arrange for the distribution of the available sugar supply, particularly that from the West Indies.

Subsequently licenses were required of cold-storage plants, canneries, meat packers, etc., and ultimately of all wholesalers, brokers, and commission men, as well as retailers with gross sales over $100,000 per year. Profits by such dealers on most staple commodities were restricted to reasonable advances on the actual purchase price, and many trade practices were closely regulated. Licenses were later revoked in a number of cases in which commission dealers were alleged to have allowed foodstuffs consigned to them to spoil. Under the terms of the Food Control Act little direct authority was given over producers or small retailers, but it was hoped to reach the latter class indirectly when necessary through their sources of supply.

Bakers using over ten barrels of flour per week were licensed in December. Pound loaves of bread were prescribed, and the use per barrel of flour of over three pounds of sugar, six pounds of skimmed milk, and two pounds of shortening (not over 15 per cent of animal origin) was prohibited. Similar regulations were made for crackers and other bakery products. The return of unsold bread, estimated at about 5 per cent in normal times, was forbidden.

Exports of food were also closely regulated under a license system designed to insure against supplies reaching the enemy countries, to meet the Allies' needs as amply as possible, and to protect the domestic supply. In December a Food Purchase Board was formed to coördinate buying for the army, navy, and allied nations.

The first commodity on which an actual shortage developed in the United States was sugar, the supply of which, after November 1, was considerably depleted, especially in the North Atlantic States. Various causes were assigned, among them the heavy shipments abroad, where the shortage was very acute, hoarding by individual consumers and others, and the increased consumption during the summer because of the enlarged home-canning activities. Retail sales in the northeastern States were quite commonly restricted to two-pound or one-pound amounts, and in some cases sugar cards were adopted either by municipalities or by dealers to promote fair distribution. Despite the shortage, retail prices of sugar were as a rule kept around ten cents per pound. Combination sales of sugar were prohibited by the Food Administration, except with corn meal, and confectioners and manufacturers of food products were restricted to one-half their normal sugar supplies from October 26 to January 1, 1918. It was expected that by the latter date the situation would be somewhat alleviated by the arrival of sugar from the new crop. See SUGAR.

The meat supply was another serious worldwide problem. American packing-house practices were being investigated by the U. S. Trade Commission in December. It was realized, however, that one fundamental difficulty was the enormous slaughter of meat-producing animals, the world decrease since the beginning of the war being estimated at 28,080,000 cattle, 54,500,000 sheep, and 32,425,000 hogs. Many of these animals were dairy cattle, this phase, intensified by high prices for feeding-stuffs and scarcity of labor, threatening a shortage of dairy products in the United States. The formation of regional milk tribunals to adjust differences between producers and dealers was announced as one prospective means of relief. See DAIRYING.

FOOD PRICES. The price of foodstuffs as a whole rose steadily in the United States throughout the year. *Bradstreet's* showed for December 14, 1917, an increase on wholesale prices of thirty-one staple foods averaging 35 per cent above the previous year. Some of the more striking increases were from $8.60 to $11.50 per barrel for wheat flour, from $1.04 to $2.20 per bushel for corn, and from 56 to 89 cents for oats, from $5.90 to $9.50 per barrel for dried peas, from 9.9 to 17.05 cents per pound for live hogs, and from 5 to 9 cents per pound for rice. On the other hand, cheese, macaroni, and prunes did not change appreciably. Coffee decreased from 10 to 8 cents per pound, and potatoes from $4.40 to $3.75 per bushel.

EUROPEAN FOOD SITUATION. The food situation in Europe was distinctly more serious than in any previous year of the war, and many drastic measures were promulgated. In Canada a food controller was appointed with wide powers. Among other measures, the manufacture and sale of oleomargarine was again permitted, and the use of bulk cereal products was encouraged. The use of canned vegetables was restricted during the season of fresh goods. Licenses were required for the exportation of most food products.

In Great Britain a food controller took charge late in 1916, when food prices were about 75 per cent higher than at the beginning of the war. A census of food stocks was taken and other measures begun to encourage production. The first attempt at rationing was made February 5 on a voluntary basis. Subsequently possession by consumers of over two weeks' food supply was made a penal offense, and sales by retailers in excess of such a supply made punishable by imprisonment. The use of sugar was restricted, especially in confectionery. Combination sales were also forbidden. Maximum and minimum prices were established for the principal commodities. Closer milling of wheat was required, a September regulation demanding a flour extraction of 81 per cent and allowing the admixture of 20 per cent additional of other grains. This plan was expected to halve wheat consumption.

A similar measure was adopted in France, but the milling percentage of wheat flour was made 90 per cent. The sale of cakes and confectionery was prohibited.

Italy required an 85 per cent milling of wheat, and restricted the consumption of bread to 21 ounces per day for workmen and soldiers and half this amount for others. Meat sales were prohibited on two days per week and sugar restricted to 17.5 ounces per month per person. Maximum prices were fixed for most commodities.

Reports from Germany were conflicting. On March 1 the milling of 94 per cent wheat flour and 84 per cent rye flour was ordered. Somewhat more liberal allowances of bread and potatoes were announced after the fall harvest, but there was increased supervision over secondary food products and many complaints of inequitable distribution. Both in Germany and the countries occupied by it the shortage of milk continued to be one of the most serious questions and occasioned enormous infant mortality.

The food supply of European neutral nations became much more precarious. Switzerland put all imports under government control and used food cards for macaroni and similar products, as well as for bread and sugar. Bread cards were required in Holland after February 5 and the admixture of 30 per cent of potato flour after March 15. The shortage of milk led to the reduction of butter exports from 50 to 15 per cent of the production as compared with the previous year.

Sweden requisitioned all large stocks of cereals, feedstuffs, beans, etc., fixed minimum and maximum prices, and restricted the use of flour, starch, and bran. Spain established an official

From American Forestry

55 VARIETIES OF FRUITS AND VEGETABLES PRESERVED BY A YOUNG UTAH GIRL

From American Forestry

A YOUNG AMERICAN GIRL WHO PUT UP 56 VARIETIES OF VEGETABLE AND OTHER FOOD PRODUCTS. A TYPICAL EXHIBIT OF CANNED GOODS MADE BY THE COLD-PACKED PROCESS AND SHOWN AT A COUNTRY FAIR

FOOD THRIFT BY CANNING FRUITS AND VEGETABLES

provisions board and regulated the price of wheat flour and bread.

Even in Guatemala the situation led to regulation of the sales of foodstuffs, and to government purchases of flour for sale to official bakeries and to the handling of other products. Food prices rose sharply all over the civilized world.

NUTRITION. Studies of the year in this field were closely related to the prospective changes in the food supply. Much work was done on the utilization of the various grains. Buckwheat proved an inferior material for bread-making, but 20 per cent of barley seemed satisfactory. Soy bean protein was found a very complete form, while millets and similar grains seemed more useful as sources of carbohydrates. Studies of various vegetable and animal fats indicated that all these products are quite thoroughly digested.

The most prominent phase of the literature of the year was the multiplicity of food leaflets and similar material. Much valuable information was disseminated in this way, as well as by home economics extension workers and other agencies, and aided materially in assisting the nation safely to modify its food habits in response to the emergency conditions. See FOOD CONTROL; also AGRICULTURE; AGRICULTURAL LEGISLATION; SUGAR; WHEAT, ETC.

FOOD CONTROL. Even before the beginning of 1917 it was evident to close observers that the food resources of the United States would be taxed to the utmost to meet all the demands made upon them. Moreover, the sharp advances in prices (q.v.) caused public apprehension. No sooner had the United States entered actively into the war than lively discussion began as to the necessary extent and proper means of food regulation. The problems were given extensive consideration in Congress, which in the "Trading with the Enemy Act," approved October 6, regulated the foreign aspects of the food problem (see FINANCIAL REVIEW), and in the Food Control Act, approved August 10, adopted the policy of extensive domestic regulation.

Previous to this act the president had authorized Mr. Herbert C. Hoover, who had had extensive experience in Belgian relief work, to begin in various ways the mobilization of opinion in behalf of food control and also in unofficial ways to begin the conservation of food resources and farm products and the promotion of stable prices. Immediately therefore upon approving the Food Control Bill the president appointed Mr. Hoover as food administrator. Mr. Hoover announced three primary purposes: (1) the elimination of undue speculation, extortion, and waste while stabilizing prices in essential articles; (2) the regulation of exports so as to insure an adequate supply for home consumption together with the greatest possible coöperation with our Allies; thus again preventing price inflation; and (3) to arouse the country to the necessity of food conservation and enlist the active support of all communities in coöperating to this end in order that the armies and civil populations of the Allies might be adequately provisioned.

FOOD CONTROL ACT. The preamble of the Food Control Act declared its purpose to be "to assure an adequate supply, and equitable distribution and to facilitate the movement of foods, feeds, fuel (including fuel, oil, and natural gas), and fertilizer and fertilizer ingredients, tools, utensils, implements, machinery, and equipment required for the actual production of foods, feeds, and fuel, hereafter in this act called necessaries; to prevent, locally or generally, scarcity, monopolization, hoarding, injurious speculation, manipulations, and private controls, affecting such supply, distribution, and movement; and to establish and maintain governmental control of such necessaries during the war." The law authorized the president: to maintain government control of all necessaries for the period of the war; to requisition or commandeer any supplies deemed necessary; to license the importation, manufacture, storage, mining, or distribution of any necessaries, and to prohibit licensees from making unjust charges; to prohibit food destruction by speculators; to purchase, store, provide storage facilities for, or sell for cash at reasonable prices wheat, flour, meals, beans, and potatoes; to take over for use or operation by the government of any factory, packing house, oil pipe-line, mine, or other plant by means of which any necessaries may be produced; to fix a reasonable guaranteed price for wheat in order to assure a producer a reasonable profit, the act itself specifying $2.00 per bushel as the standard price for the 1918 wheat crop; to prohibit the use of food, fruits, food materials, or feeds in the distillation of beverages after September 8, 1917; to prohibit the importation of distilled liquors; to commandeer any or all distilled spirits in bond or in stock; to regulate the manufacture of vinous or malt liquors; to fix the price of coal and coke, establish rules for their production, sale, shipment, distribution, apportionment, or storage, or even to take over coke plants and coal mines; to require all producers of coke and coal to sell their products only to the United States through an agency designated by the president; and to procure such stocks of nitrate of soda as may be deemed necessary for increasing agricultural production in 1917-18.

WHEAT. On August 14 President Wilson issued a proclamation requiring all persons engaged in storing or distributing wheat or rye and all persons engaged in manufacturing products from wheat or rye, except those operating mills with a capacity of one hundred barrels or less and farmers and coöperative associations of farmers, to take out a government license by September 1. One of Mr. Hoover's first acts was the appointment of a committee to determine a fair price for the 1917 wheat crop. In this connection he announced that it was the intention of the food administration to use every power to control wheat exports; that producers holding back grain in anticipation of higher prices might induce the government to buy the entire crop; and that the holding of larger supplies of wheat or flour than necessary for the ordinary course of business would be prosecuted with vigor. This committee, announced August 15, was composed of men representative of all sections of the country, and included 4 farmers, 1 capitalist, 3 college presidents, 1 banker, 1 professor of economics, and 2 representatives of labor. Its personnel was as follows: Harry A. Garfield, president of Williams College, chairman; Charles J. Barrett, president of the Farmers' Union; William M. Doak, vice-president of the Brotherhood of

Railroad Trainmen; Eugene E. Funk, president of the National Corn Association; Edmund F. Ladd, president of North Dakota Agricultural College; R. Goodwin Rhett, president of the Chamber of Commerce of the United States; J. W. Shorthill, secretary of the National Council of Farmers' Coöperative Associations; James W. Sullivan, of the American Federation of Labor; L. J. Tabor, master of the Ohio State Grange; Professor F. W. Taussig, of Harvard University, chairman of the United States Tariff Commission; Theodore N. Vail, president of the American Telephone and Telegraph Company; and Henry J. Waters, president of the Kansas State Agricultural College.

On August 15 also was announced the formation of a $50,000,000 corporation to be used in connection with the buying and selling of wheat, and with power to take over the entire 1917 crop if necessary to maintain the prices determined upon. The executive officers of this corporation were: H. C. Hoover, chairman; Julius Barnes, Duluth, Minn., president; Gates W. McGarrah, president of the Mechanics and Metals Bank, New York City, treasurer; E. G. Crowell, Kansas City, Mo., vice-president; Edward Chambers, vice-president of Santa Fé Railway, Chicago, Ill., transportation director; Judge Curtis H. Lindley, San Francisco, Cal., counsel; J. W. Shorthill, secretary of National Council of Farmers' Coöperative Associations, York, Nebr., secretary.

In addition the food administration named twelve men to represent its grain division in the purchasing of wheat at the following twelve terminal points: Baltimore, Buffalo, Chicago, Duluth, Kansas City, Mo., Minneapolis, New Orleans, Omaha, Philadelphia, Portland, Ore., San Francisco, and St. Louis. At the same time the millers of the country announced on August 15, following a conference at Washington, the names of twelve men constituting a committee to represent the milling industry, in accordance with a request of the food administration.

Organization. The organization of the Federal Food Administration was extensive. In addition to a large group of national food administrators headed by Herbert C. Hoover, and having responsibility for the production and distribution of particular articles, there was in each state a state food administrator who had under his authority and coöperating with him representatives in every important community. The national and State administrators constituted the Federal food board. The support of consumers was secured by a scheme of enrolling families and the issuance of pledge cards indicating family coöperation in the food conservation plan, such cards to be displayed in household windows. Nearly 10,000,000 families were thus enrolled. Similarly practically all of the better class hotels signed pledges. Restaurants issued proclamations for meatless and wheatless days; similarly the consumption of pork was reduced in December. This almost universal popular coöperation was the most far-reaching aspect of the food administration's activities. At a conference on November 30 including representatives of wholesale and retail grocers, fish dealers, butchers, and bakers, arrangements were made for the fixing of the retail prices of more than twenty staple groceries. These were to be periodically redetermined by the coöperation of food administrators and wholesalers; the prices were to be those which ought to obtain rather than those which must obtain; and the principle of "making the dealers police their own job" was adopted.

Licensing. The above act authorized the licensing of dealers. Under this authority the president issued various proclamations in October and November requiring the licensing of all wholesalers and manufacturers of foods and all retailers doing a gross business of more than $100,000 per year. Thus the supply of at least twenty important foods from producer to local retailer were brought under public scrutiny. Retail prices were not controlled directly but only through the above indicated indirect pressure of wholesalers.

Sugar. The first article of which an acute shortage was experienced was sugar, and of this the serious shortage was limited to the Atlantic seaboard. Early in the fall Mr. Hoover appealed to the public to reduce its consumption of sugar in order that France and other Allies might be supplied. After repeated efforts the wholesale price of sugar was fixed by a consultation of representatives of the United States, the Cuban government, and various Allies at New York on December 1. Thereafter the food administration gave much attention to the expediting of imports and the distribution of the Louisiana crop. The shortage, however, continued severe in New England and Middle Atlantic States. Dissatisfaction with the sugar situation and other aspects of food control and price regulation led to the beginning of an investigation by a Senate committee in December. At hearings in Washington and New York numerous charges were made against the food administration, especially by Claus Spreckles, of the Federal Sugar Refining Company. To these Mr. Hoover later replied.

Great Britain. Late in November, 1916, the British Government adopted a policy of food control. The Board of Trade was given extensive power to prevent waste, to regulate the production and distribution of articles, to fix prices, and otherwise to increase and safeguard the food supplies of the country. These activities became so important that a Ministry of Food was finally established with Lord Rhondda as food controller. The first number of the *National Food Journal* issued by the ministry was issued September 12, 1917. Therein the food controller announced that his policy would be to fix prices of articles of prime necessity over which control at all stages could be secured; to prevent speculation; to eliminate unnecessary middlemen; to utilize existing agencies of distribution under the license, control, and supervision of local committees. It was shown that the average of retail food prices in the United Kingdom on August 1, 1917, was 101.7 per cent more than at the outbreak of the war. This advance was explained by the high prices in countries from which food is purchased, by the high ocean freight rates, due in part to war-risk insurance, and by the advances in prices, due to currency inflation.

Only the more important of the numerous food orders may be here indicated. The Ministry of Food took over all imported beans, peas, and pulse; fixed maximum retail prices therefor; and required that they be sold only by weight and for human consumption. Bread orders forbade the sale of bread until it was twelve hours old; designated the shapes allowable; prohibited the making of currant, sultana, or milk bread; prohibited the use of sugar in bread; required all loaves to be one pound or even pounds in weight; required that no wheat, rye, rice, tapioca, sago, manioc, or arrow root or their products should be used except for human food; grains must not be used except for seed or human or animal food; the extraction of flour from wheat was raised to 81 per cent; maximum retail prices for cereals were fixed, including the 1917 harvest of wheat, rye, oats, and barley; all flour mills using wheat were taken over by the food controller. As regards cakes and pastries all fancy products were prohibited, and the amounts of sugar and wheat flour permissible were prescribed. As regards brewing, the food controller took over all barley except that which had not been kiln dried. In March the output of beer in each quarter was limited to one-third of the output during the corresponding quarter of the year ending March 31, 1916; the manufacture of malt was prohibited, except under license. The food controller took over all imported cheese; laid down rules regarding the taking and distribution of fish; fixed the prices for fruits, jams, and jellies and prescribed the composition of jams and jellies; placed restrictions on the feeding of horses; regulated the buying and butchering of cattle, sheep, deer, goats, and swine; fixed the maximum wholesale price of milk, per gallon, at 13 cents and the retail price, per quart, at 4 cents above the price on the 15th of the same month in 1914; placed all hotels, restaurants, clubs, and refreshment places on a rationed basis; fixed the price of chocolates and restricted the amount of sugar used in manufactures other than jam, marmalade, and condensed milk at 25 per cent of the amount used in 1915. Other orders dealt with the retailing of tea and coffee.

In the autumn maximum prices were established for numerous meat products; special regulations for the sale and distribution of sugar were inaugurated; maximum prices for cheese and butter of various kinds were established; and the supply of various kinds of seed potatoes was brought under control; both wholesale and retail prices of flour and bread were fixed. As an aid in administration committees were formed in towns and counties to administer the new plan of sugar distribution, to carry on a campaign in behalf of food economy, and to assist in carrying out subsequent orders. These committees numbered not more than twelve members each, included at least one woman and one representative of labor, and charged their necessary expenses to the public treasury.

The plan of sugar distribution inaugurated October 1 provided for the licensing of dealers handling this article. Through the post office consumers made application for sugar registration cards; these cards were filled out and returned to the local food committee, which returned to the consumer a sugar registration card authorizing a licensed retailer to sell to the person indicated stipulated amounts of sugar. These cards were then deposited with licensed sugar retailers who were in turn provided with supplies by the central administration.

France. Food control was less extensive in France than in the Central Powers or even in England. Unlike Germany, she had no blockade of imports until February 1, 1917, and she was more self-sufficient normally than Great Britain. On the other hand, her rich northern provinces from which she derived large portions of beet sugar as well as wheat and potatoes were in possession of Germany very early in the war. On the other hand, the 1917 crop of cereals, potatoes, and sugar beets was only 770,000,000 bushels, or 300,000,000 bushels less than in 1914. The policy of fixing maximum prices was adopted early in the war, especially as regards cereals and cereal products, as also the purchase by the government of foreign wheat and its distribution throughout the country. This latter function was carried on by the Supply Commission under the Ministry of Commerce, many million dollars' worth of wheat being thus imported. In consequence, bread prices in France advanced less than in England. The policy of fixing maximum prices was extended from wheat, first to oats, rye, barley, bran, and grain offals, and later to sugar, coffee, potatoes, milk, margarine, aliment fats, edible oils, dried legumes, paraffin and petrol, commercial fertilizer, copper, sulphate, and sulphur. Various import prices were also established while throughout the war zone military authorities fixed the prices of articles of food and drinks. These policies were extended in 1917 during the latter half of which for the first time the policy of rationing was introduced as regards sugar and bread. There were the usual restrictions as regards confectionery and pastries; limitations of courses in restaurants and hotels; and increasing detail in the control of distribution. An important feature in the French system was the development of municipal and coöperative meat and produce markets. These later developments were carried out by Edouard Herriot, minister of Public Works, Food Supplies, and Transportation. He was given extensive authority in the provisioning of the civilian population as well as the army. French representatives abroad purchased in 1917 not only wheat but other cereals, sugar, and other foods.

Germany. In no country was such careful attention given to the problem of food supplies. Until June 1, 1916, control of foods was vested in the Department of the Interior of which von Delbrück was secretary. On that date a separate department called the War Nutrition Office was created under the direct control of the chancellor, and Adolph von Batocki was appointed to its presidency. Among the powers of this office were the following: to confiscate *in toto* animal and plant products; to determine the amount of produce to be left with producers for further productive uses; to regulate live stock feeding, crop acreage and rotation, use of fertilizer, prices of produce, and the uses that growers may make of their crops; to regulate all milling processes, the use of grain for alcoholic beverages, the manufacture of industrial products from produce of the soil, the disposition of live stock, and the production and distribution of milk; to limit the number of middlemen, both wholesalers and retailers; to regulate the selection of a retailer by a consumer; to fix hours for the sale of foods, the prices that may be charged, and amounts which any one may possess; to regulate restaurants, eating houses and hotels; and to ration the entire population. It is impossible to enumerate the elaborate detail with which these powers were applied. There was an extensive application of modern chemistry both in the production of new foods and the utilization of great quantities of materials previously wasted, and in determination of necessary allowances for individual diet. In the large cities civic kitchens were established, and in many places field kitchens were sent into the streets, at public expense. It was estimated that these municipal establishments had capacity for 6,000,000 persons daily by the spring of 1917. As made public in October by our government the German ration per week per person included: flour, 3.45 lbs.; potatoes, 7.05 lbs.; cereals, peas, and beans, 7 oz.; meat, 8.8 oz.; fats, 5.6 oz.

In December considerable publicity was given to a petition of the Municipal Council of Neuköln (Berlin) to the Food Distribution Department in which it was alleged that large manufacturers had purchased great quantities of food which they were selling to their employees at extortionate rates; and that municipal authorities in order to avoid popular discontent with this policy of the manufacturers had themselves advanced food prices beyond the maxima set by the Imperial authorities.

Italy. Immediately upon Italy's entrance in the war in May, 1915, the government took measures to conserve foodstuffs. Previously decrees had prohibited the exportation of numerous articles; subsequently this embargo list was greatly extended. Import duties on grain and flour had been abolished in January, 1915, and shortly thereafter the government took measures to facilitate the importation of grain by the establishment of provincial grain purchasing associations and regulation of maritime and railway facilities. Bread making and milling were standardized; efforts were made to increase harvests; maximum prices were fixed in January, 1916, for domestic wheat, corn, and flour, and later for sugar, and finally for all articles in common use. In August, 1916, the Minister of Agriculture was given most extensive powers of food control. Finally, on January 16, 1917, a Commissioner General for Food Supplies was created under the general control of a commission consisting of the Ministers of Agriculture, Interior, and Maritime and Railway Transportation. Thereafter regulations became steadily more specific and detailed. Meanwhile, the larger cities, notably Genoa, Milan, Florence, Venice, and Rome had also inaugurated extensive programmes of food control and price regulation.

Other Countries. Reports from Austria-Hungary indicated that conditions there were much worse than in Germany; and that central and local governments were using extraordinary powers to prevent starvation by regulating prices, production, distribution, and consumption. From all Scandinavian countries, Holland, Finland, and Russia also came numerous reports of crucial food shortage. Commissions from Norway, Finland, and Holland sought release of food supplies by the National Food Administration for shipment to their respective countries. On December 21 some 40,000 tons of grain were thus released for starving Finns. By an arrangement with other Allies the United States agreed to supply stipulated quantities of food to Switzerland and Holland. See Agriculture; Agricultural Legislation; Canada; Food and Nutrition; Garbage and Refuse Disposal; Wheat; Sugar, etc.

FOOTBALL. Football was more widely played during 1917 than ever before despite the fact that Yale, Harvard, and Princeton, three of the leading football colleges of the East, were not formally represented on the gridiron. To offset this condition the sport was taken up at the various army and navy training stations where many of the star players of former years were preparing for the war game. The smaller colleges, by reason of the elimination of the "Big Three," had the satisfaction of gaining the limelight in this sport to an extent undreamed of heretofore. It was possible also as a result of the unusual conditions to determine definitely the strongest elevens in the various sections of the country.

The leading college team in the East was without question that of the University of Pittsburgh. In the Middle West, Ohio State University once more attested to its superiority among the Conference elevens. The South produced an extraordinarily strong team in the Georgia School of Technology. Nebraska reigned supreme in the Missouri Valley, while the University of Oregon again carried off the laurels on the Pacific Coast. The best of the "Service" teams was undoubtedly the Newport Naval Reserves led by the former Yale star, "Cupid" Black.

One result of the war as affecting football was the small attendance at the games in comparison with other years. This was most noticeable in the East and was chiefly due to the absence of contests in which Harvard, Yale, and Princeton were wont to figure. Games between college teams and service combinations were played in New York and Boston, the two leading centres of the sport in normal years, but they failed to draw the large crowds anticipated.

The good showing made by the University of Pennsylvania team, after an inauspicious start, aroused interest in Philadelphia and the usual gridiron fixtures held there were fairly well attended. In the West and South, the number of spectators at the big games was, if anything, larger than in former years.

Walter Camp, owing to the conditions, did not attempt to name an All-America team, but contented himself with selecting what he termed the "Stars of 1917." Those singled out by the Yale football authority follow:

Ends—Robeson, Rutgers; Weeks, Brown; Miller, Pennsylvania; Tressel, Pittsburgh; Calac, West Virginia; Carroll, Washington and Jefferson; Carlson, Pittsburgh; Kelley, Wisconsin; Castellanos, Colgate; Zimmerman, Washington State; Bolen, Ohio State; Adams, Vanderbilt; Ecklund, Minnesota; Klein, Illinois.

Tackles—Henry, Washington and Jefferson; Hauser, Minnesota; Cobb, Syracuse; Carpenter, Georgia Tech.; Ice, West Virginia; Walker, Oregon Aggies; Rendall, Rutgers; Rundquist, Illinois; Bonner, Auburn; Maynard, Pennsylvania; Sinclair, Brown; Gordon, California.

Guards—Sies, Pittsburgh; Rollins, Rutgers; Stiles, Washington State; Sutherland, Pittsburgh; Bonner, Auburn; Lynch, Holy Cross; Cleary, Pennsylvania; Neeley, Dartmouth; Higgins, Chicago.

Centres—Bailey, West Virginia; Robertson, Syracuse; Way, Pennsylvania; Guy, Washington and Jefferson; Phillips, Georgia Tech.; Van Dyne, Ohio State; Hansen, California.

Quarterbacks—Bell, Pennsylvania; Boynton, Williams; Meehan, Syracuse; Steers, Oregon; Cresswell, Occidental; Morrison, Pomona; Mallette, Southern California; Hill, Georgia Tech.; Simpson, Wisconsin; Cook, Nebraska.

Backs—Guyon, Georgia Tech.; McLaren, Pittsburgh; Berry, Pennsylvania; Bangs, Washington State; Rodgers, West Virginia; Harley, Ohio State; Strupper, Georgia Tech.; Whitehill, Rutgers; Ducote, Auburn; Straus, Pennsylvania; Flower, Davidson; Harlan, Georgia Tech.; McQuade, Georgetown; Easterday, Pittsburgh; Kelly, Rutgers; Gillo, Colgate; McCreight, Washington and Jefferson; Boone, Washington State; Cornog, Dartmouth; Wells, California; Murphy, Washington; Newman, Oregon Aggies; Koehler, Northwestern.

A summary of the games played by the leading college teams follows:

Pittsburgh 14, West Virginia University 9; Pittsburgh 40, Bethany 0; Pittsburgh 41, Lehigh 0; Pittsburgh 28, Syracuse 0; Pittsburgh 14, Pennsylvania 6; Pittsburgh 25, Westminster 0; Pittsburgh 13, Washington and Jefferson 10; Pittsburgh 27, Carnegie Tech. 0.

Syracuse 14, Rutgers 10; Syracuse 0, Pittsburgh 28; Syracuse 58, Tufts 0; Syracuse 6, Brown 0; Syracuse 42, Bucknell 0; Syracuse 27, Colgate 7; Syracuse 2, Michigan Aggies 7.

Rutgers 25, Ursinus 0; Rutgers 10, Syracuse 14; Rutgers 33, Lafayette 7; Rutgers 28, Fordham 0; Rutgers 7, West Virginia 7; Rutgers 61, Springfield Y. M. C. A. College 0; Rutgers 14, Newport Naval Reserves 0.

Brown 27, Rhode Island 0; Brown 20, Johns Hopkins 0; Brown 27, Worcester 6; Brown 7, Boston College 2; Brown 7, Colgate 6; Brown 0, Syracuse 6; Brown 0, Newport Naval Reserves 35; Brown 19, Colby 7; Brown 13, Dartmouth 0.

Pennsylvania 73, Albright 0; Pennsylvania 0, Georgia Tech. 41; Pennsylvania 10, Swarthmore 0; Pennsylvania 20, Bucknell 6; Pennsylvania 6, Pittsburgh 14; Pennsylvania 27, Lafayette 0; Pennsylvania 23, Pennsylvania Military College 0; Pennsylvania 7, Dartmouth 0; Pennsylvania 16, Michigan 0; Pennsylvania 26, Carlisle 0.

U. S. Naval Academy 27, Davidson College 0; Navy 0, West Virginia 7; Navy 62, Maryland State 0; Navy 61, Carlisle 0; Navy 89, Haverford 0; Navy 95, Western Reserve 0; Navy 28, Georgetown 7; Navy 80, Villanova 3.

U. S. Military Academy 28, Carnegie Tech. 0; Army 34, Virginia Military Institute 0; Army 26, Tufts 3; Army 21, Villanova 7; Army 2, Notre Dame 7; Army 28, Carlisle 0; Army 50, Lebanon Valley 0; Army 13, Boston College 7.

Georgia School of Technology 33, Wake Forest 0; Georgia Tech. 25, Furman 0; Georgia Tech. 41, Pennsylvania 0; Georgia Tech. 32, Davidson 10; Georgia Tech. 63, Washington and Lee 0; Georgia Tech. 83, Vanderbilt 0; Georgia Tech. 48, Tulane 0; Georgia Tech. 98, Carlisle 0; Georgia Tech. 68, Auburn 0.

Ohio State University 49, Case 0; Ohio State 53, Ohio Wesleyan 0; Ohio State 40, Northwestern 0; Ohio State 67, Denison 0; Ohio State 26, Indiana 3; Ohio State 16, Wisconsin 3; Ohio State 13, Illinois 0; Ohio State 0, Auburn 0.

According to figures compiled by the Associated Press football caused the death of twelve players during 1917, or three less than in the previous year. With one exception the victims were high school students or players who had had little training.

The Fall River Rovers won the soccer championship of the United States by defeating the Bethlehem Steel Co. Football Club, winner of the American Challenge Cup. The score was 1 to 0. Haverford captured the American intercollegiate honors.

FORAGE POISONING. See VETERINARY MEDICINE.

FORAKER, JOSEPH BENSON. An American political leader, died in Cincinnati, Ohio, May 10, 1917. He was born near Rainsboro, Ohio, July 5, 1846. From 1862, when he enlisted in the 89th Ohio Volunteer Infantry, he fought to the end of the Civil War, rising to the rank of brevet captain. He was with Sherman on his march to the sea. Afterward he attended Ohio Wesleyan University for two years, at the same time studying law, and in 1869 he graduated at Cornell, after a year at that university. Soon after his admission to the Ohio bar, he became active in politics. From 1879 to 1882 he served as judge of the superior court of Cincinnati, and by 1885 had become governor of the State, an office to which he was reëlected two years later. During his two terms in the United States Senate (1897-1909) he was much of the time in the public eye because of his aggressive personal attacks on prominent men He had early begun a fight against Mark Hanna, boss of the Ohio Republican machine, and later a man of national importance, and upon Hanna's death Foraker became State leader of his party. He was a conspicuous figure in every Republican National Convention from 1884 to 1904, and presented McKinley's name for the presidential nomination in 1896 and 1900. During Theodore Roosevelt's second term he was a violent opponent of the president, and in fact became recognized as the mouthpiece of anti-Roosevelt sentiment. Taft, then Roosevelt's lieutenant, came in for his share of Foraker's enmity. He gained the nicknames of "Fire Alarm" Foraker and "the bulldog of politics." In constructive politics, he was known as an early champion of the Cuban revolt against Spain, and as a promoter of the Panama Canal project and of the measure which made its construction possible—the Hay-Pauncefote treaty. Foraker's political downfall resulted, as he himself admits, in his *Notes on a Busy Life* (1916), from the publication by William Randolph Hearst of the Archbold letters, which indicated that the senator had received retainers from the Standard Oil Company while in office. This incident occurred in 1909 and Foraker retired the same year to the practice of law. An attempt to reënter politics in 1914 as candidate in the Republican primaries for the senatorial nomination, was unsuccessful.

FORDHAM UNIVERSITY. A Roman Catholic institution of learning located in New York City. In the fall of 1917 there were 1356 students, enrolled as follows: Arts and sciences, 371; law, 406; medicine, 285; pharmacy, 115; sociology, 179. There were also 194 members of the faculty. Volumes in the library numbered 73,000. Fordham was founded in 1841. President, Rev. Joseph A. Mulry, S. J.

FORD TRUCKS. See AUTOMOBILES.

FOREIGN EXCHANGE. See FINANCIAL REVIEW.

FOREIGN TRADE. See FINANCIAL REVIEW.

FORESTRY. The fall of 1917 was one of the dryest on record and most favorable for the spread of destructive forest fires. This was especially true in the Pacific Northwest where 7688 fires were extinguished by private, State, and forest service employees. All interests for forest protection combined employed 2579 regular patrolmen outside of about 12,000 extra fire fighters, the total expenditure for fire protection by all concerned being $1,825,000.

There was an unusual prevalenee of incendiarism, especially in regions where timber was being cut to meet urgent war needs. In August the governor of Oregon placed detachments of troops throughout the State where trouble prevailed and incendiary fires stopped at once. The governor also closed the hunting season after it had been open for a week. In the State of Washington the forest fire wardens controlled bad fires at the expense of those responsible for their origin, and this provision of the Washington law was commended by authorities in ether States. Taking the fire season as a whole, many bad fires occurred, but the property loss was relatively small as compared with previous bad fire seasons and no loss of life was reported.

FORESTERS AND THE WAR. With the entry of the United States into the war it became quickly recognized that American foresters and lumbermen could render the same valuable assistance to the allied armies in France that Canadian foresters and lumbermen were already rendering. A regiment known as the 10th Engineers (Forest) was organized and trained at American University Park, Washington, D. C., during the summer, and reported in France late in September. A second regiment, the 20th Engineers (Forest), was being trained late in the year. The ten battalions of foresters, woodsmen, and lumbermen were a strength of 7500 enlisted men. In addition, there were to be nine service battalions with a strength of 7250 enlisted men comprised of laborers. United States Forester Henry S. Graves was commissioned as a lieutenant colonel in charge of the division of forestry of the American expeditionary forces. All lumbering operations, in so far as is consistent with the needs of the armies, will be conducted with respect to the reforestation and future growth of the woodlands.

THE NATIONAL FOREST SERVICE. The total net area of the 152 national forests on June 30, 1917, was 155,166,619 acres. Over seventy million acres had been examined in the work of releasing agricultural lands for homestead entry. Up to 1917, 11,912,473 acres had been eliminated from the national forests and 921,046 acres of land chiefly vaulable for forestry had been added to them. In addition, 947,198 acres had been acquired by purchase under the act of March 1, 1911, for the establishment of water-shed forests in the White Mountains and Southern Appalachians. The total receipts from the national forests for the year ended June 30, 1917, amounted to $3,450,000 or over $600,000 more than in the banner year 1916. The cost of operating the forests was about $4,000,000 or virtually the same as in 1916. Of the receipts $926,530 was allotted for the year commencing July 1, 1917, to the States in which the forests were situated, for county, school, and road purposes. One million dollars also became available under the Federal Aid Road Law (see article *Forestry*, YEAR BOOK for 1916) for the development of roads and trails within or partly within the national forests.

An increase of 25 per cent in the grazing fees on all national forests went into effect in 1917. The national forest ranges usually pasture 1,800,000 cattle and horses and 7,800,000 head of sheep. As a war emergency measure these numbers were increased somewhat in 1917. The Biological Survey of the U. S. Department of Agriculture reported that prairie dogs had practically been destroyed over 767,000 acres of national forest range within the previous five years. During this period, a total of about 2,500,000 acres of government land in the West had been relieved of range-destroying rodents.

War emergency work in the field of forest products has assumed such large proportions that it has been necessary for the Forest Products Laboratory at Madison to discontinue most of the peace-time investigations. A very important part of the work relates to methods of conditioning rapidly, through artificial seasoning, woods used in the manufacture of rifles, airplanes, and vehicles. Material assistance in these directions was rendered to the War and Navy Departments, to the Shipping Board and the Emergency Fleet Corporation, to various committees of the Council of National Defense, and to manufacturers of war orders.

By the use of an improved process developed at the laboratory, operating expenses in the production of ethyl or grain alcohol from wood waste could be reduced by $300 per day. Experiments conducted in pine forests in Mississippi indicated that the yields of turpentine and rosin could be increased by 30 per cent or more the first year by cutting two narrow faces rather than one broad face on the trees per week, thereby increasing the net returns by about $450 per crop of 10,000 faces. A process was perfected under which hemlock shiplap could be dried to shipping condition with practically no loss of grade in forty to forty-eight hours. Further study of the utilization of various waste barks, for the manufacture of pulp and paper products, were made on eight species. Tests under the soda process of making paper were continued for thirteen species, and a good quality of pulp suitable for high grade wrapping paper was secured from eighteen species by using the sulphate process of making paper. Data from tests of mechanical properties of various species of wood make possible scientific grading rules for structural timber, such as already perfected for southern pine.

LUMBER AND BY-PRODUCTS. According to the estimate given by the lumber committee of the Council of National Defense, 2,000,000,000 feet of lumber, or about 5 per cent of the country's annual output, would be required for purposes directly connected with the war in 1918. The forest resources of the United States were fully able to meet the unprecedented demands upon them without materially reducing our reserve timber supply. The emergency which the lumber industry was meeting had not been in the volume of the wood required, but rather in the urgency and special requirements. These could all be met, although, in some cases, not as promptly as might be desired.

PULPWOOD. According to statistics collected by the forest service in coöperation with the News-Print Manufacturers' Association, the consumption of pulpwood in the United States in

1916 by the 230 establishments reporting was 5,228,558 cords, an increase of 757,795 cords, or 17 per cent over the 4,470,763 cords consumed by the 223 mills reporting in 1914, the last year for which statistics of this kind were compiled. Of the total consumption 4,444,565 cords were of domestic production and 783,993 cords were imported. The quantity produced during 1916 amounted to 3,271,310 tons and represents an increase of 378,160 tons, or 13 per cent more than the 2,893,150 tons produced in 1914. Canada produced 1,764,912 cords of pulpwood for home consumption and exported 1,068,207 cords in 1916.

According to the report of The American Wood Preservers' Association for 1916 a total of 150,522,982 cu. ft. of wood was treated by the 117 treating plants reporting. The quantity of the preservatives used by the industry during 1916 in the treatment of the 150,522,982 cu. ft. of wood reported amounted to 90,404,749 gallons of creosote and refined water-gas-tar, 26,746,577 pounds of zinc chlorid, 5,675,095 gallons of paving oil, and 582,754 gallons of miscellaneous preservatives.

In Great Britain a scheme for the collection and utilization of horse chestnuts for munition purposes was approved and active steps were taken to collect a supply of horse chestnuts through the school children. Experiments conducted show that for every ton of horse chestnuts that are harvested a half ton of grain can be saved for human consumption.

New Legislation. Congress prohibited any further additions to the national forests areas in Washington, Oregon, California, Idaho, Montana, and Wyoming, except exchange of government timber for privately owned lands in certain of these forests which may be chiefly valuable for the production of timber or the protection of stream flow. Additions to the National Forests of Colorado were authorized as the result of a petition of the people of the State. Oregon and Tennessee provided for stringent laws relative to setting fires in woodlands through clearing up land. Nebraska authorized counties, cities, and villages to acquire and operate adjoining forest reserve tracts. A State forestation commission was also established. Additional State forests were authorized in Minnesota, together with a survey of public lands with special reference to securing lands which would be suitable for reforesting with pulpwood species.

Forest Schools, Personnel, etc. In Venezuela a presidential decree of March 12, 1917, created an experiment station of agriculture and forestry, with an acclimatization garden, to be located near Caracas and intended to serve as a model for other such stations to be established elsewhere in the Republic. H. Pittier, recently of the U. S. Department of Agriculture, was in charge of the station. A department of forest chemistry was established at the New York State College of Forestry, with Dr. S. F. Acree, formerly of the U. S. Forest Service Laboratory, in charge. The college was also offering a course in city forestry. The University of California announced a correspondence study course on *Lumber and Its Uses.* A one-year course in lumbering was inaugurated by the Forest School of the Georgia State College of Agriculture. A court decision confirmed the title of the University of California in the so-called Whitaker's forest, a splendid body of timber of 320 acres situated in Tulare County. The area was willed to the university six years ago, both for experimental purposes and as a park, but was in liquidation.

With the year 1917 *Forestry Quarterly*, which completed its fourteenth volume in December, 1916, was amalgamated with the *Proceedings of the Society of American Foresters* under the title *Journal of Forestry.* The new magazine was published in eight monthly issues, with the exception of June, July, August, and September, and remained essentially the same in character as the former publications. The experiment stations in the Netherlands Indies are issuing a journal, *Archief voor de Rubbercultuur in Nederlandsch-Indie*, the first number of which appeared in February, 1917. This journal was to include all of the stations' articles on rubber and will supersede the various bulletins and pamphlets previously publishing such articles. Although the articles will be written in Dutch, extensive abstracts or summaries in English treating all important points will be added. The committee of editors was composed of the directors and scientific officers of the experiment stations. *The Gum Tree*, a new publication, is the official organ of the Australian Forest League. It was published in the interests of scientific forestry and conservation in Australia.

Important works published in 1917 or the preceding year were:

Bibliography. J. P. Kinney, *The Development of Forest Law in America* and *The Essentials of American Timber Law* (New York, 1917); T. S. Woolsey, Jr., *French Forests and Forestry* (New York, 1917); D. E. Hutchins, *A Discussion of Australian Forestry, with Special References to Forestry in Western Australia, the Necessity of an Australian Forest Policy, and Notices of Organized Forestry in Other Parts of the World; together with appendixes relating to Forestry in New Zealand, Forestry in South Africa, and Control of the Rabbit Pest* (Perth, Australia, 1916); A. D. Webster, *British-Grown Timber and Timber Trees* (London, 1916); M. Rothkugel, *Los Bosques Patagonicos* (Buenos Aires, 1916); J. L. B. Taylor, *Handbook for Rangers and Woodsmen* (New York, 1917); E. H. Wilson, *The Conifers and Taxads of Japan* (Pubs. Arnold Arboretum No. 8, 1916); H. D. Tiemann, *The Kiln Drying of Lumber* (Philadelphia and London, 1917); American Wood-Preservers' Association, *Handbook on Wood Preservation* (Baltimore, 1916). See Water Works.

FORLANINI AIRSHIP. See Military Progress.

FORMOSA, or Taiwan. An island dependency of Japan, off the coast of the Chinese province of Fukien. The capital is Dai-Hoku (or Taipei). The area of the island of Formosa is 2318 square ri (35,759.5 square kilometres); of the seven adjacent isles, 5.6 square ri (86.4 square km.); total, 2324.1 square ri (35,845.8 square km., or 13,840 square miles). This area is a little larger than the combined extent of Massachusetts and Connecticut. The estimated population at the end of 1916 was 3,710,848 (1,942,007 males, 1,768,841 females); at the end of 1914, 3,598,434, of whom 3,437,017 were indigenes, 141,835 Japanese, and 19,582 foreigners. Population of Dai-Hoku (consisting of Jonai, Moko, and Daitote) on December 31, 1911, 95,077; Dainan (or Tainan), 59,601.

The most important agricultural product is rice. Other products are sugar-cane, tea, sweet potatoes, jute, ramie, and indigo. The yield of rice in 1914 is stated at 4,608,256 koku, and in 1915 4,784,578 koku (1 koku equals 5.119 bushels U. S.); sugar, 251,279,219 kin in 1914, and 347,446,398 kin in 1915 (1 kin equals about 1.323 pounds, or 0.6 kilogram); tea, 22,723,565 kin and 25,432,126 kin; sweet potatoes, 721,162 and 709,080 metric tons; jute, 4,490,323 and 4,061,679 kin; ramie, 1,632,197 and 1,573,009 kin; indigo, 2,408,608 and 2,290,719 kin. An important forest product is camphor, which is worked as a government monopoly. The output of camphor in 1914 was 4,558,124 kin and in 1915, 4,620,183 kin; camphor oil, 5,466,732 and 6,881,242 kin.

The following mineral products are reported for 1914 and 1915 respectively: coal, 345,529 and 382,403 metric tons; sulphur, 1205 and 1377 metric tons; gold, 365,607 and 438,685 momme (1 momme equals 0.12057 Troy ounce, or 3.75 grams); gold dust, 23,199 and 27,280 momme; silver, 426,438 and 395,241 momme. The total mineral output in 1913 was valued at 4,015,102 yen, and in 1914 at 4,439,416 yen (the yen has a par value of 49.846 cents). Output value in 1913 and 1914 respectively, in thousands of yen: gold, 1502 and 1823; coal, 1222 and 1311; copper, 998 and 1056; silver, 63 and 57; other minerals, 230 and 188. Fishery produce was valued at 1,412,118 yen in 1913, and 1,662,656 yen in 1914.

Live stock at the end of 1913 and 1914 respectively: cattle, 428,307 and 404,507; goats, 129,094 and 124,682; swine, 1,321,920 and 1,313,389; horses, 179 and 137.

Manufactures include flour, sugar, spirits, tobacco, oil, soap, glass, and brick.

Imports and exports of merchandise were valued at 64,954,658 yen and 112,272,285 yen respectively in 1916, as compared with 53,369,270 and 75,623,174 in 1915, and 52,893,085 and 58,720,430 in 1914. Imports from and exports to foreign countries and from and to Japan have been as follows, in yen:

	Imports		*Exports*	
	Foreign	*Japan*	*Foreign*	*Japan*
1906	..12,737,460	15,634,341	9,779,084	18,259,528
1911	..19,555,047	33,739,556	13,175,590	51,643,586
1912	..19,307,126	43,325,290	14,960,228	47,831,451
1913	..18,023,724	42,835,593	12,942,442	40,446,620
1914	..14,013,937	39,879,148	12,982,314	45,738,116
1915	..12,781,778	40,587,492	15,430,278	60,192,896
1916	..15,430,037	49,524,621	31,652,474	80,619,811

In 1915, classified imports and exports (both the foreign and the Japanese trade) included the following, in thousands of yen: rice, other cereals, flour, etc., 3107 and 8396; provisions, beverages, and tobacco, 12,355 and 47,252; drugs, dyes, etc., 5713 and 13,433; cotton fabrics, yarn, etc., 7126 and 1302; minerals, pottery, metal goods, etc., 6437 and 3199.

Trade in merchandise by countries, in thousands of yen:

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
Japan	40,587	49,525	60,193	80,620
China	7,663	7,329	4,994	10,389
British India	1,678	2,586	258	858
Great Britain	712	1,234	932	781
Hongkong	21	26	584	1,788
United States	762	761	6,180	7,539
Australia	11	9	61	5,280
Total, incl. others	58,869	64,955	75,623	112,272

In 1916, there were in operation 318 miles of government railway and 961 miles of private light railway. In addition there were private tracks for hand-pushed cars, totaling 697 miles; these tracks, peculiar to Formosa, are the most important means of local communication. Telegraphs in 1916: 160 offices, with 632 miles of line and 2618 miles of wire. Post offices in 1916, 159.

Revenue and expenditure in the fiscal year 1914-15 were 53,164,329 yen and 47,695,835 yen respectively; ordinary revenue was 39,007,619 yen, and ordinary expenditure 32,447,621 yen. The budget for 1916-17 balanced at 39,980,903 yen, and for 1917-18 at 47,474,727 yen. Estimated ordinary revenue for 1917-18 was 41,694,901 yen, including receipts from public undertakings and state property, 31,524,804 yen; inland taxes, 7,435,807; stamps, 1,073,040. Estimated ordinary expenditure for 1917-18, 35,966,299 yen, including: monopoly bureau, 12,000,276 yen; government railways, 3,568,276; communications, 1,606,439; administration office, 1,303,343; local governments, 989,536. Government monopoly is established in respect of opium, salt, camphor, and tobacco. The government prohibits opium smoking except in the case of certain confirmed smokers who are licensed to use the drug as medicine. The number of licensed smokers has decreased year by year and stood at 66,847, as compared with 169,064, the maximum number, in 1900. Formosa is administered by a Japanese governor-general.

FORTY IMMORTALS. See Academy, French.

FOSTER, John Watson. An American diplomatist, dean of the American diplomatic corps and father-in-law of Hon. Robert Lansing, secretary of state, died November 15, 1917, in Washington, D. C. He was born in Pike Co., Ind., March 2, 1836, graduated at Indiana State University in 1855 and in 1857 was admitted to the bar. When the Civil War broke out he entered the Union service as a major of volunteers, and after promotion to the rank of colonel was given command of a brigade in Gen. Burnside's expedition to east Tennessee and was the first to occupy Knoxville (1863). After the war he turned to newspaper work in Evansville, Ind., where he edited the *Daily Journal* in 1865-69 and was postmaster in 1869-73. He was minister to Mexico in 1873-80, minister to Russia in 1880-81, and minister to Spain in 1883-85. In 1891 Foster was engaged to assist President Harrison and Secretary Blaine to negotiate reciprocity treaties, with the result that treaties were made with France, Germany, Austria, Spain, and with all the South American republics except Colombia and Venezuela. During the Bering Sea controversy he was agent for the United States before the arbitration tribunal (1893). Upon the death of Secretary Blaine, Foster became secretary of state (1892-93). Later he was legal adviser to the Chinese plenipotentiaries in their peace negotiations with Japan (1895); again represented the United States in the Bering Sea question (1897); and in 1898 he was a member of the Anglo-American Joint High Commission to settle outstanding disputes between Canada and the United States. He was agent for the United States in 1903 before the Alaska Boundary Commission; and in 1907 he was delegate from China to the Second Hague Conference. After 1907 he retired to private life in Washington. He published a biography of his father, Judge Matthew Watson Foster (1896); *A Century of American Diplomacy* (1900); *American Diplomacy in the Orient* (1903); *Arbitration and the Hague Court* (1904); *The Practice of Diplomacy* (1906); *Diplomatic Memoirs* (1909). He contributed an introduction to Mannix's *Memoirs of Li Hung Chang* (1913). In 1916, on his eightieth birthday, he received from Yuan Shih-Kai, first president of the republic of Chinå, the Order of the Golden Grain, in recognition of his political services to that country.

FRANCE. The most westerly state of Central Europe, extending from 42° 20′ to 51° 5′ N. lat., and from 7° 45′ E. to 4° 45′ W. long., bounded on the north by the Channel and Straits of Dover, which separate it from England. Its circumference is estimated at about 3000 miles, and its area at 207,129 square miles. The territory lost in 1871 amounted to 5602 square miles. France is divided into eighty-seven departments, including the island of Corsica, in the Mediterranean, off the west coast of Italy. The principal rivers are the Seine, Loire, Garonne, and Rhône; the principal forests, Ardennes, Compiègne, Fontainebleau, and Orléans. This country has been a republic since September 4, 1870, under a constitution revised in 1875, '84, '85, and '89. In the War of the Nations France was an original member of the Triple Entente. War was declared on France by Germany August 3, 1914, and on August 10 France declared war on Austria-Hungary.

In the northern section across which contending armies have long raged, riddling fertile fields with trenches, destroying timber and fruit trees, razing hamlets and outlying farm buildings, once were prosperous cities; among them Lens, twelve miles north of Arras by rail and some eighteen miles southwest of Lille, the centre of one of the richest coal regions of northern France (Pas-de-Calais). It is surrounded by 200 square miles of coal-fields which, prior to the war, yielded annually 15,000,000 tons of fuel and which gave employment to 25,000 men. In addition, the city itself had numerous steel and iron foundries, engineering works, and steel cable manufactories. On the line between Arras and Lens is the village of Vimy, which gives its name to the famous ridge over which the contending armies have been fighting for nearly two years. To the northwest is Calais, seventy miles distant by rail. The Deule or Souchez River flows through the town; thereby, with the Lens Canal, affording water transportation northward into the Lys.

Situated on the canalized river Scarpe, 137 miles north of Paris and ninety-seven miles south of Brussels via the French Northern Railway, is Arras, the chief town of the department of Pas-de-Calais and before the war the most important grain market in northern France. Amiens is thirty-eight miles by rail to the southwest. The surrounding territory is a fertile plain with the Vimy Ridge some six miles to the north. To the north and slightly east of Paris lies Cambrai, 121 miles distant by rail, via St. Quentin and Busigny, and 128 miles by way of St. Just, Chaulnes, and Peronne; it is twenty miles northeast of Arras. The importance to both belligerents of this town is due in large measure to the railways which radiate from it. A main line extends to Valenciennes, twenty-eight miles to the northeast; another passes through Caudry, a town of 11,000 inhabitants, and Busigny in a southwesterly direction to St. Quentin. A line goes to Le Cateau (sixteen miles) with important woolen and spinning mills, and another to Solesmes, a linen manufacturing town (thirteen miles). The lines of the western sector run southwest to Douai (sixteen miles), west to the village of Boisleux, a station on the important Arras-Amiens railway line, and south to St. Quentin on the Somme, and to Chaulnes, branching east and west at Roisel.

Directly east of the Vimy Ridge and fifteen miles by rail northeast of Arras lies Douai, which at the outbreak of the war had a population of nearly 40,000, engaged in thriving industries. One of its most important establishments was a large cannon factory. Glass and chemicals, ropes, farm implements, soap, and leather were also manufactured here, while the Scarpe Canal afforded cheap water transportation for an extensive trade in grain, agricultural products, and coal.

As far as possible from the danger zone of German air raiders is the American aviation school located at Toulon, one of the strongest fortresses in France and with Brest a leading base of the French navy. Less than sixty miles northeast of Toulon is St. Raphael, where the French have an aviation camp of their own.

AREA AND POPULATION. A complete list of the departments with their area and population according to the latest official figures is given in the 1916 YEAR BOOK. Also a list of the principal cities with their population over 30,000. The territory occupied by German troops at the end of the year included parts of the following departments: Nord, a department covering 5,773.73 sq. kilometres and having a pre-war population of 1,961,780; Aisne, 7,428.35 sq. kilometres and 530,226 inhabitants; Ardennes, 5,252.59 and 318,896; Meuse, 6240.57 and 277,955; Meurthe et Moselle, 5279.56 and 564,730; Vosges, 5903.03 and 433,914; Marne, 8205.31 and 436,310; Pas de Calais, 6751.56 and 1,068,155. An estimate purporting to be authoritative reports that approximately 15,501 square miles were at one time held by the Germans, or approximately seven and one-half per cent of the total area of France; that approximately 6535 square miles are now under German domination, or three per cent of the area of France. In other words, more than fifty-seven per cent of the French territory which was held by the Germans before the battle of the Marne has been recovered. France covers altogether 536,463.74 sq. kilometres and had a pre-war population of 39,601,509 inhabitants. Paris, the capital, had 2,888,110 inhabitants.

Births and deaths are given for 76 departments only in 1915 at 382,466 and 646,301 respectively; for 1914, at 594,222 and 647,549; 1913, 745,539 and 703,638; 1910, 774,390 and 702,972.

PRODUCTION AND SUPPLIES. According to a statement by the French minister of supply, the 1917 harvest in France was the worst in fifty years. This was due in part to the exceptionally severe weather the previous winter, which did great damage to autumn sown crops, and even more largely to the disastrous spring. Almost to the end of April continuous snow and frost prevented any adequate work from being done in the fields, and the consequent rush that came in the succeeding few weeks could not be coped with by the laborers and their women folk still left on the land. Using the production of 1913 as a basis, the 1917 wheat crop was short 53.3 per cent.; the potato crop short 33.1 per cent.; the sugar beet crop short 67.9 per cent. Discussing the shortage of labor, the minister of supply says: "Last year a slightly better season pulled the figures up somewhat, but the case is only too apparently one of deficiency in labor. Proportionately the recruitment of the French army is much more largely from the land than in Great Britain, where the industrial centres, both under the volunteer system and the new service acts, have provided the bulk of the men for the army. Actually it is estimated by the Ministry of Agriculture that 8,000,000 people of both sexes—a fifth of the population—are employed on the land in France, and from their number at the time of the mobilization in 1914 3,000,000 of the best were taken. During the three years since that date the remnant, old men, unfit men, women, and children, have had to carry on the work of the second line of national defense. They have worked heroically."

The food supply was definitely organized in October, 1915. The law of October 16, 1915, intrusted to this service the arrangement for wheat and flour supplies for the civilian population, and placed at its disposal a credit of 120,000,000 francs as working capital. A statement of profit and loss must be supplied to the finance minister. The first, after about a year's transactions, showed a loss of 142,156,000 francs, to which amount should be added customs, duties, and registration fees paid by the service, together with the sundry charges incurred by receiving agencies, etc. At a later date, the loss increased from 142,000,000 to about 400,000,000; to which again should be added 229,000,000 customs, duties, and registration fees, with agency charges. The payments have now reached an amount approximating 1,717,000 and the receipts have been about 869,000,000, leaving a deficiency of 848,000,000 francs. This deficiency was not unexpected by parliament, where it was known that in creating the food supply service serious loss was likely.

In the winter of 1916 coal rose to the exorbitant price of £10 a ton, and even at that price, when the Seine was frozen, it was difficult to get. In 1917 every household was provided with a coal card and though the amount supplied was far from adequate it might with the aid of wood be made to eke the winter out. Bread cards, giving an allowance of one pound per day per person, were issued, while the quality had improved. The third card-controlled item, sugar, was reduced in allowance from 750 grams to 500 grams (about 17 ounces) per month, a reduction which the food minister stated would mean a saving of 150,000 tons, and a consequent available shipping space for 5,000,000 bushels of wheat. See FOOD CONTROL.

By the law of October 16, 1915, requisition price must not exceed 30 frs. per 100 kilogrammes for wheat weighing 77 kg. per hectolitre and containing not more than 2 per cent extraneous matter. The farmer was not at liberty to charge more than 29 fr. for black or gray oats, and 29 fr. for white oats. By law enacted July 29, 1916, taking effect August 1, for the period of the war, and during the year following general demobilization, the farmer was not at liberty to charge more than 33 francs per quintal for wheat, whether sold or requisitioned. To this price the farmer might add 1 fr. 50 cost of transport and cartage to mills, etc. By decree dated January 16, 1917, the maximum price for all descriptions of barley of good quality, weighing at least 60 kilos per hectolitre, and containing not more than 2 per cent of extraneous matter, must not exceed 31 francs per quintal at the farm. The maximum price for all descriptions of rye of good quality must not exceed 30 francs per quintal at the farm. According to a decree of April 8, 1917, wheat reported previously to April 25, 1917, would be taken over by the administration at 36 fr. per 100 kgs. To this price may be added 1 fr. 50 for charges incurred.

In December, 1916, a measure was passed authorizing the cultivation, for the duration of the war and for a further period following the end of hostilities, of all unused lands with motor tractors. A paragraph of the law authorized the Ministry of Agriculture to purchase at home or abroad all machinery and implements required to enable an extensive cultivation of the soil; a credit of 30,000,000 francs was voted to carry out the project. Buyers of tractors were to receive a subvention from the departmental authorities equal to one-third of the purchase price. The scarcity of fertilizing materials, particularly phosphates and chemical fertilizers, was an unfavorable factor in the agricultural situation. This was due mainly to transportation difficulties. The phosphate production of the North African mines was reduced by labor shortage.

The Food Ministry decided that after February 19, maximum prices should be fixed throughout France for milk, butter, and cheese. In the department of the Seine, including Paris, the price of milk must not exceed 10 cents for a litre (about a pint and three-quarters) if bought in a shop, or 11 cents if delivered. The maximum prices for butter vary from $1.12 to $1.34 per kilo (roughly two pounds), according to the quality and source. The only cheese prices fixed so far were Camembert, from 13 cents to 26 cents the small box, according to quality, and Pont l'Eveque at slightly higher prices. All prices must be conspicuously displayed in the shops concerned.

The following table gives area in hectares and yield in quintals of main crops for 1917 (provisional), 1916 (final), and for the 5-year average 1911-15. The data for 1917 and 1916 do not include the territory occupied by the enemy. In order to render the five-year averages comparable with the other data, we have calculated these after taking into account the area at present invaded and the average yield of that area.

Hectares	*1917*	*1916*	*1911-15*
Wheat	4,224,450	5,030,080	5,918,374
Rye	810,270	869,580	1,059,234
Barley	718,530	622,380	705,059
Oats	3,118,560	3,147,450	3,533,772
Corn	298,620	328,656	438,780
Flax	6,483	5,840	21,832
Potatoes	1,432,240	1,305,440	1,500,594
S. beets	71,822	77,506	191,414
Vines	1,498,762	1,593,750	1,618,502
Silk *	......	15,441	27,920

Quintals	*1917*	*1916*	*1911-15*
Wheat	39,231,330	55,767,320	78,919,325
Rye	6,987,700	8,471,580	10,549,162
Barley	8,612,610	8,331,890	9,309,446
Oats	34,462,570	40,223,810	43,298,124
Corn	......	......	5,161,926
Flax †	......	......	142,325
Potatoes	......	91,311,000	124,353,140
S. beets	......	19,099,600	......
Vines ‡	......	36,068,273	45.867,398
Silk §	......	2,820,037	4,522,250

* Hectograms of eggs prepared for incubation.
† Fibre.
‡ Hectolitres.
§ Kilograms of cocoons.

The total area covered by olive plantations was estimated at about 296,525 acres. The bounty granted by the government to olive growers in 1916 was fixed at the rate of 14 francs per hectare. It was reported that the 1916-17 olive crop would be much below the average of the preceding 10 years.

The French production of almonds also decreased materially during the last 10 years. It appears, however, that the 1916 crop was somewhat in excess of that of 1915, which amounted to 3008 metric tons. The principal centre of the almond trade was at Aix-en-Provence, which handles, in addition to the local crop, large quantities of almonds from various Mediterranean countries, mainly from Spain and French northern Africa. The trade in almonds at Aix averaged about $4,000,000 annually.

The quantities of wine delivered from the growers' premises since the beginning of the season on October 1, 1916, until June 30, 1917, were 23,754,833 hectolitres in France, and 6,688,475 hectolitres in Algeria. The stock in trade held by wholesale dealers on June 30 was 7,345,142 hectolitres in France, and 438,296 hectolitres in Algeria. The corresponding figures for deliveries during the same period in the previous year were, respectively, 18,073,821 and 4,778,919 hectrolitres. Those of stock in trade were 8,478,540 and 216,350 hectrolitres.

During 1916 the consumption of coffee in France was estimated at 2,400,000 bags. Stocks in bonded warehouses in the three principal ports on December 31, 1916, were 2,957,000 bags (each of 60 kilos), and at Bordeaux 70,000 bags. The total stocks on December 31, 1913, amounted to only 2,896,000 bags, of which 2,704,000 were at Havre, 148,000 at Marseilles, and 46,000 at Bordeaux.

The number of cattle declined in the past five years 16.5 per cent; the number of sheep, 36.6 per cent; the number of hogs, 40.2 per cent. A table follows showing live stock on farms July 1, 1917 and 1916, and December, 1913:

	1917	*1916*	*1913*	*Difference*
Horses .	2,282,560	2,281,415	3,222,080	+ 1,145
Asses ..	324,580	329,459	356,310	— 4,879
Mules .	150,115	150,069	188,280	+ 46
Cattle .	12,443,304	12,723,946	14,787,710	— 280,642
Sheep ..	10,586,594	12,079,211	16,131,390	— 1,492,617
Pigs ...	4,200,280	4,448,366	7,035,850	— 248,086

Of the horses enumerated July 1, 1917, 1,721,970 were over and 560,590 were under three years (July 1, 1915, 1,562,742 and 664,467); of the cattle, 6,238,690 were cows (6,346,496), 1,295,120 oxen (1,262,315), 214,764 bulls (211,343), 2,677,870 young stock (2,581,870), and 2,016,860 calves (1,884,825). Of the sheep, 6,463,720 were ewes over one year (8,033,886), 1,139,320 sheep over one year (1,572,236), 188,204 rams (239,832), 2,795,350 lambs (3,637,235); pigs under six months numbered 2,245,310; fat stock over six months, 1,300,840; breeding sows, 628,040.

In the course of the sitting of September 29 at the Chamber of Deputies, the minister of agriculture observed that pre-war statistics dealt with the whole area of France, while the present data refer only to uninvaded territory; he went on to say that the figures were nevertheless comparable, since on the conclusion of peace the requirements of the whole country would have to be met by the supplies mentioned as available in 1917. See article AGRICULTURE.

THE INDUSTRIAL SITUATION. At the outbreak of war in August, 1914, a great demoralization of industry took place, shown by the fact that the number of establishments in operation dropped 50 per cent and the number of workmen employed (in establishments for which statistics are available) decreased from 1,637,166 to 534,387. Part of this decrease was due to the mobilization of the army, which withdrew an average of 24 per cent of the labor force. Among those which suffered the most were the textile, wood-working, building, and metal industries. Subsequently there was a steady recovery, both in number of establishments in operation and of workers employed, in practically every branch of industry in unoccupied territory. Naturally those industries directly contributing to the conduct of the war (the iron and steel, chemical, and food-producing industries) show the most considerable increase. In the invaded regions of northern France, Germany was using the sequestration rights allowed by international law for systematic pillaging and plundering. Sequestrators in Germany supplanted the proprietors of French business establishments and house property. Large firms in the metal industries whose capital was mostly French found themselves compelled to submit to the authority of German administrators, who dismissed all the managers and foremen and were running the business at a loss, whereas the returns of the year before the war showed in one such concern a clear profit of 740,000 marks.

In contrast to this German method of sequestration, sequestration of German property by the French was exercised with justice and in many instances plants sequestered were operated at a profit to the investors.

No statistics are available for the output of the coal mines of the Pas-de-Calais since the war began. Up to that time the annual production of these mines averaged 25,000,000 tons. At least half of them are now in invaded territory and the remainder have been taken over by the military authorities. In December, 1916, soft coal was selling at $15 per ton and French anthracite at about $20 per ton, against $6 and $10, respectively, in normal times. British anthracite was imported to supply the deficiency due to an increased demand and sold for $30 per ton at the close of 1916. The tanning industry was devoted exclusively during 1916 to government work, except for the authorized sale of rejected material to private buyers, who bought at extraordinarily high prices.

The increased charges for freight, insurance, and war risk made the cost of cotton very high; but the French mills continued to do a large business, and it is generally reported that the spinning and weaving industries as a whole had a most successful season, notwithstanding the high cost of raw material.

There were in Marseilles 43 flour mills, with a daily grinding capacity of 1560 metric tons; 25 semolina factories, with a daily consumption capacity of 661 metric tons of raw wheat; a large number of macaroni factories. In normal years the products manufactured by these establishments were exported in large quantities and shipped to various sections of France. During 1916 the output of these industries entered almost entirely into domestic consumption; it was below normal in the case of flour mills and semolina factories, owing to difficulties in obtaining sufficient quantities of raw materials.

Three of the leading sugar refineries are established in Marseilles. Their total average output is about 146,000 metric tons annually, about two-thirds of which is usually exported, mainly to Morocco and other Mediterranean countries. These establishments worked to their full capacity during 1916.

COMMERCE. It is a well recognized fact that the trade and industry of a belligerent country are largely regulated by its status as victor or vanquished. After the Franco-Prussian War, French trade took several years to recover from the paralyzing effect of the nine months' siege of Paris. In Germany, on the contrary, there was a great increase in industrial activity, and foreign trade prospered to a marked degree. In the present war Germany has been practically isolated, while the French ports have remained open.

The value of French foreign trade during 1916, not including gold and silver coin, bullion, and the baser coinage, according to the official provisional statistics, was 20,275,102,000 francs as compared with 14,973,163,000 francs in 1915; an increase of 5,301,939,000 francs. The value of the imports was 15,159,412,000 francs, against 11,035,794,000 francs in 1915, an increase of 4,123,618,000 francs, or 37 per cent; and the value of the exports was 5,115,690,000 francs, as compared with 3,937,369,000 francs, an increase of 1,178,321,000 francs, or over 29 per cent. The imports of gold and silver coin and bullion and of the baser coins in 1916 were valued at 146,341,000 francs, against 126,886,000 francs in 1915, an increase of 19,455,000 francs; and the value of the exports during the past two years was 34,643,000 francs and 150,823,000 francs respectively. The imports of gold coin and bullion increased from 38,268,000 francs in 1915 to 57,288,000 francs in 1916; the exports during 1916 were 630,000 francs, as compared with 115,242,000 francs in 1915. The imports and exports of silver coin and bullion in 1916 were 89,029,000 francs and 33,638,000 francs respectively, as compared with 88,607,000 francs and 35,556,000 francs, respectively, in 1915.

Imports for four years are given below by great classes (special trade), value in thousands of francs (A—foodstuffs, B—raw materials, C—manufactured articles):

Imports	*1912*	*1913*	*1915*	*1916*
A	1,803,400	1,916,500	3,314,797	4,076,052
B	4,813,200	4,941,600	4,653,404	6,452,320
C	1,614,200	1,650,300	3,067,593	4,631,040
Total..	8,230,800	8,508,400	11,035,794	15,159,412

Exports appear in the following table, by great classes as above, with the addition of D (by parcel post), values in thousands of francs:

Exports	*1912*	*1913*	*1915*	*1916*
A	849,800	833,200	648,953	483,262
B	1,944,900	1,882,700	767,521	801,090
C	3,917,900	4,159,500	2,341,317	3,587,024
D	......	......	179,578	244,314
Total..	6,712,600	6,875,400	3,937,369	5,115,690

The above totals for 1916 were computed on the basis of the average 1915 prices and are therefore less than the actual figures. As it was officially stated that no exact coefficient of increase could be given at the time of publication of the 1916 statistics, the approximately true figures of the foreign trade of France during the report year can not be computed.

As shown by the foregoing tables, the balance of trade against France during 1916 was 10,043,722,000 francs. Food purchases abroad in 1916 amounted to 4,076,052,000 francs, and the foreign sales were 483,262,000 francs, a difference of 3,592,790,000 or nearly 100 francs per capita of population. Wheat, with other cereals and flour, leads in food imports with the value of 1,694,361,000 francs. In 1908, the year of good crops, the import of cereals were only 201,286,000 francs. Next comes meat with imports of 564,589,000 francs; in 1913 the value was only 38,679,000 francs. The imports of wine in 1916 were 332,815,000 francs and brandy for drinking purposes 30,806,000 francs, a total of 363,621,000 francs. Of the wine imports, Algeria sent 183,015,000 francs, as compared with 321,495,000 out of a total importation of 343,523,000 in 1915. Coffee imports were 289,178,000 francs; sugar, 413,178,000 francs (only 34,302,000 francs in 1913); and cocoa, 99,281,000 francs.

The value of the imports of raw or half-finished material for the industries in 1916 was 6,452,320,000 francs. The principal items were: Iron and steel, 1,216,501,000 francs; other metals, 630,074,000 francs; coal, 1,142,839,000; cotton, 425,444,000; wool, 315,842,000; silk, 218,696,000; oleaginous seeds and fruits, 342,033,000; crude and refined petroleum, 284,091,000; and horses, 275,885,000. More than two-thirds or 3,587,024,000 francs of the exports were manufactured products. Of the imports in 1916 the value of manufactured products was 4,631,040,000 francs, the principal classes being machinery, 687,035,000 francs; wool tissues, 613,326,000 (50,603,000 francs in 1913); cotton tissues, 282,332,000 (56,474,000 in 1913); tools and metal work, 392,707,000, and chemical products, 332,728,000.

The foreign shipments of manufactured articles from France in 1916, were, with the exception of those during 1913, the largest for the past ten years. The great majority of articles mentioned in the list of French exports showed an increase during 1916, except those upon which embargoes were placed. The United States was France's best customer for cotton goods, feathers, raw hides, perfumery, and soap, pottery, glass and crystal, seeds for sowing, and table fruits; Great Britain for chemicals, flowers, leaves and artificial fruits, prepared skins, imitation jewelry, leather goods, lingerie, and wearing apparel, milk, butter and cheese, paper and paper goods, Parisian novelties, manufactures of silk, manufactures of wool, and wines; and Italy for colors and inks, machinery, tools, and metal work, real jewelry, rubber goods, raw silk, and raw wool.

In the imports into France the United States leads in automobiles and other vehicles, cereals, copper, raw cotton, horses, machinery, salted and otherwise prepared meats, petroleum, tobacco, and ordinary wood. Great Britain made the largest shipments of coal, manufactures of cotton, prepared and raw skins and hides, tools and metal work, lingerie and wearing apparel, crude and manufactured rubber, tin, and silk and woolen textiles. Italy sent raw silk and Argentina fresh and refrigerated meats, exotic wood, and raw wool.

Countries of origin and destination, special commerce, values in thousands of francs:

Imports

	1913	*1914*	*1915*	*1916*
U. K.	1,113,100	870,000	3,037,647	4,048,379
Germany	1,068,800	593,900	......	......
U. S.	894,700	787,600	3,027,618	4,766,938
Belgium	556,200	316,400	22,791	5,755
Algeria	330,800	312,800	546,895	427,148
Russia	458,100	311,200	77,386	172,991
Argentina	369,200	217,100	472,983	788,722
Spain	281,500	195,800	581,362	652,005
Italy	240,500	173,900	433,181	504,859
Brazil	174,200	160,500	209,800	277,742
Switzerland	135,200	101,900	244,176	407,685
Turkey	93,600	77,300	......	......
Aus.-Hun.	103,400	60,900	......	......
Other	......	......	2,381,952	3,162,193
Total	8,421,300	6,349,200	11,085,794	15,159,412

Exports

	1913	*1914*	*1915*	*1916*
U. K.	1,453,800	1,153,700	1,098,898	906,023
Germany	866,700	498,500	......	......
U. S.	422,600	375,700	446,190	492,692
Belgium	1,108,400	603,900	36,151	42,420
Russia	83,200	60,900	113,334	859,832
Argentina	199,900	93,800	107,841	121,484
Spain	151,200	111,400	139,475	152,194
Italy	305,700	213,500	338,294	685,886
Brazil	86,300	39,100	55,468	63,056
Switzerland	406,100	299,600	297,694	299,736
Turkey	83,200	72,500	......	......
Aus.-Hun.	43,800	32,000	......	......
Algeria	552,500	437,300	367,708	388,449
Other	......	......	886,316	1,103,918
Total	6,880,200	4,824,500	3,937,869	5,115,690

During 1916, 6150 French vessels of 5,626,301 tons with cargo arrived in French ports, as compared with 6628 vessels of 6,207,816 tons during 1915 and 6886 vessels of 7,277,362 tons during 1914. During the same years the arrivals of vessels of other nationalities were as follows: In 1916, 26,259 vessels of 20,439,370 net tons; in 1915, 20,574 of 17,745,086 tons; and in 1914, 17,062 of 20,319,964 tons. Total vessels of all nationalities arriving in French ports, 32,409 of 26,065,671 net tons in 1916, against 27,202 of 23,952,902 tons in 1915 and 23,948 of 27,597,326 tons in 1914.

Finance. The monetary unit is the franc, par value 19.295 cents. Below are given the average monthly rates of exchange for sight sterling and the demand rates for the American dollar during 1916, with the highest and lowest rates for each month (A equals high, B equals low, C equals average):

	£A	*£B*	*£C*	*$A*	*$B*	*$C*
	Frcs.	*Frcs.*	*Frcs.*	*Frcs.*	*Frcs.*	*Frcs.*
Jan.	28.00	27.89	27.89½	5.91½	5.83	5.85½
Feb.	28.21	27.95	28.08	5.92	5.86½	5.88¼
March	28.48	28.02	28.28½	5.98⅛	5.87¾	5.93⅛
April	28.93	28.20½	28.49	6.07	5.92¼	5.98
May	28.27	28.20	28.25	5.94¼	5.91½	5.92⅞
June	28.18½	28.13	28.15½	5.91½	5.90⅜	5.90⅞
July	28.13½	28.12½	28.13	5.90⅝	5.90¼	5.90⅜
Aug.	28.12½	28.06	28.11	5.91½	5.88½	5.90¼
Sept.	28.06	27.86½	27.92½	5.88⅞	5.82¾	5.86
Oct.	27.80	27.79	27.79	5.84⅛	5.83	5.83½
Nov.	27.79	27.79	27.79	5.83¾	5.83	5.83½
Dec.	27.79	27.79	27.79	5.85⅛	5.83½	5.83⅞

One of the problems of 1916 was that of the foreign exchanges on account of the material excess of imports over exports. Although every effort was made to develop the resources of the country, there was an unfavorable balance of trade. On the Bank of France to a large extent fell the burden of covering this balance in conjunction with the government, and at the end of 1916 the sterling and dollar exchanges were substantially the same as at the beginning of the year, and none of the other exchanges, with the exception of the Spanish, was much lower.

The antebellum national expenditure was 5,191,000,000 francs, and then there was a budget deficit. Next year's civil expenditure is estimated at 7,808,000,000 francs. Towards this total the existing revenue will supply 6,542,000,000 francs and new taxation will product 1,266,000,000 francs. During 1915 and to the end of October, 1916, the national treasury received 81,300,000,000 francs, whereof taxes produced 12,900,000,000 francs and loans 68,400,000,000 francs.

Russian loans are a source of anxiety. Since the visit of Nicholas II to Paris in 1896 to cement the Russo-French alliance, loan after loan has been floated on the Paris Bourse always with a fair measure of success. The aggregate Russian state indebtedness to French investors is probably somewhat in excess of fifteen billion francs, to which must be added the French advances made to the czar's government since the beginning of the war, amounting probably to another three billion francs.

Revenue and expenditure are given below in francs for three years (1915 budget estimate).

	1910	*1911*	*1915*
Revenue	4,278,890,789	4,689,045,845	3,883,971,126
Expend.	4,321,918,609	4,547,915,741	21,961,462,479

A comparative table for 1915 and 1916, showing details of the budget for those years, is given below; amounts are in francs:

Revenue	*1915*	*1916*
Direct taxes	613,806,726	540,719,241
Registration	463,594,500	524,617,000
Stamps	146,167,500	157,638,000
Exchange	1,312,000	2,342,000
Income tax	157,782,000	181,432,500
Customs	764,144,000	1,399,421,000
Indirect taxes	477,069,000	472,902,000
Mineral oil	227,000	462,000
Sugar	236,617,000	204,051,000

Revenue	*1915*	*1916*
Tobacco	502,349,000	559,692,000
Matches	40,839,000	43,000
Lighters	950,000	727,000
Gunpowder	3,091,000	9,461,000
Posts, tels. & tels.	289,861,000	328,900,000
Various	565,200	779,500
Domains, etc.	185,681,100	240,204,000
Other	....	....
Total	3,883,971,126	4,125,713,000

Expenditure	*1915*	*1916*
War	16,178,118,293	25,061,634,829
Debt charge	1,827,393,673	3,005,017,927
Administration	20,145,038	20,217,388
Finance	438,041,954	541,472,584
Justice	58,002,623	58,154,180
Foreign affairs	32,695,592	53,926,127
Interior	716,242,008	836,589,047
Marine	707,641,282	777,937,220
Merchant marine	83,177,990	72,743,887
Instruction	358,644,472	367,899,031
Fine arts	20,465,195	18,752,400
Com. & Ind	135,151,211	14,508,750
Labor, etc.	165,079,845	416,040,656
Posts & tels	405,524,777	150,779,987
Colonies	153,578,837	193,314,109
Agriculture	65,838,473	57,539,698
Public works	607,809,214	667,115,103
Total	21,961,462,479	32,313,632,923

At the beginning of 1916 the greatest gold reserve in Europe was held by France. The official report of the annual meeting of the Bank of France, held January 25, was given in United States newspapers of March 7. Extracts follow:

In spite of the lack of labor a further restriction of our agricultural production has been avoided. This has been effected by the double efforts on the part of the courageous rural population on the one hand and by improved processes of cultivation on the other.

In the mining industry the growing demand for coal and steel has led not only to an increased working of existing mines but to the opening of further deposits, notably in the western districts, rich in iron ores. In Savoy, Dauphiny, and the central Pyrénées, numerous factories have been erected with the use of hydro-electric power for metallurgical and chemical processes. Army orders are furnishing these two classes of undertaking with opportunities for successful operations. General progress is shown in the continued increase in the gross railway receipts and in the resumption of transactions based on credit. Thus the tax stamp on commercial paper produced in 1916 an 80 per cent increase over the receipts for 1915. The impression gained from these figures is confirmed by the increase in the discount business. At the end of 1915 holdings of unmatured paper amounted to 94,000,000 francs, but at the end of 1916 this figure had grown to 594,000,000 francs. The average of the two years rose from 266,000,000 francs to 447,000,000 francs. The growth of regular discount business has been accompanied by a fresh diminution of nearly half a billion francs in funds affected by the moratorium. This is a further indication of the gradual reëstablishment of the circulation of capital. The financial market has shared equally in the improvement. Although the Bourse is still closed to operations for the account, the quotations of most of the stocks have strengthened. This has permitted the advantageous liquidation of contracts entered into prior to the war.

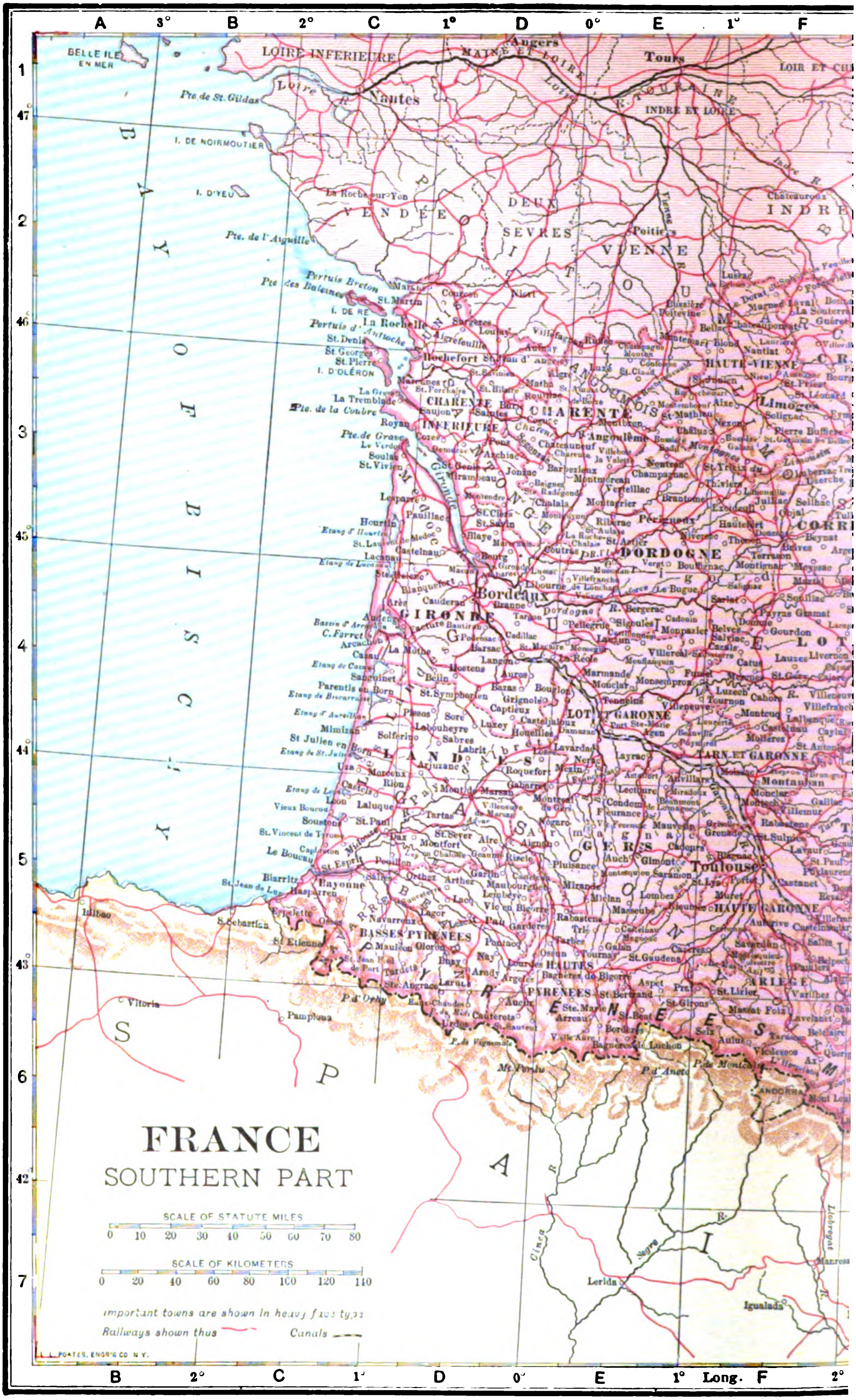
In announcing last year the opening of a credit of $20,000,000 under the auspices of the Bank of France, by a group of banks and trust companies of New York, in favor of a group of French establishments, the hope was expressed that the path thus opened would be largely used in future. This hope has been realized. Not only have Brown Bros. been ordered to renew this first credit, but several other operations, similar in form, have been conducted on behalf of French companies and undertakings forced to purchase in America their raw materials or their manufacturing machinery.

In spite of outgoings of gold, amounting since the beginning of the war to 1,057,000,000 francs, gold reserves at the end of the year were 5,082,000,000 francs, of which 3,489,000,000 francs were in the vaults of the bank and 1,593,000,000 francs on deposit abroad.

The capital of the debt stood, January 1, 1914, as follows: Finance ministry, 27,336,711 francs; instruction, 12,110,798; public works, 4,107,410,200; total general, 31,456,396,709; floating debt, 1,432,412,800; a total of 32,888,809,509. Total credits voted since the beginning of the war, 72,671,239 francs, of which 51,409,834,474 francs for defense. Floating debt, September 30, 1916, 18,890,567,000 francs; loans, 3,239,302,000; consolidated debt, 11,925,865,000; advanced by Bank of France and Bank of Algeria, 8,620,000,000.

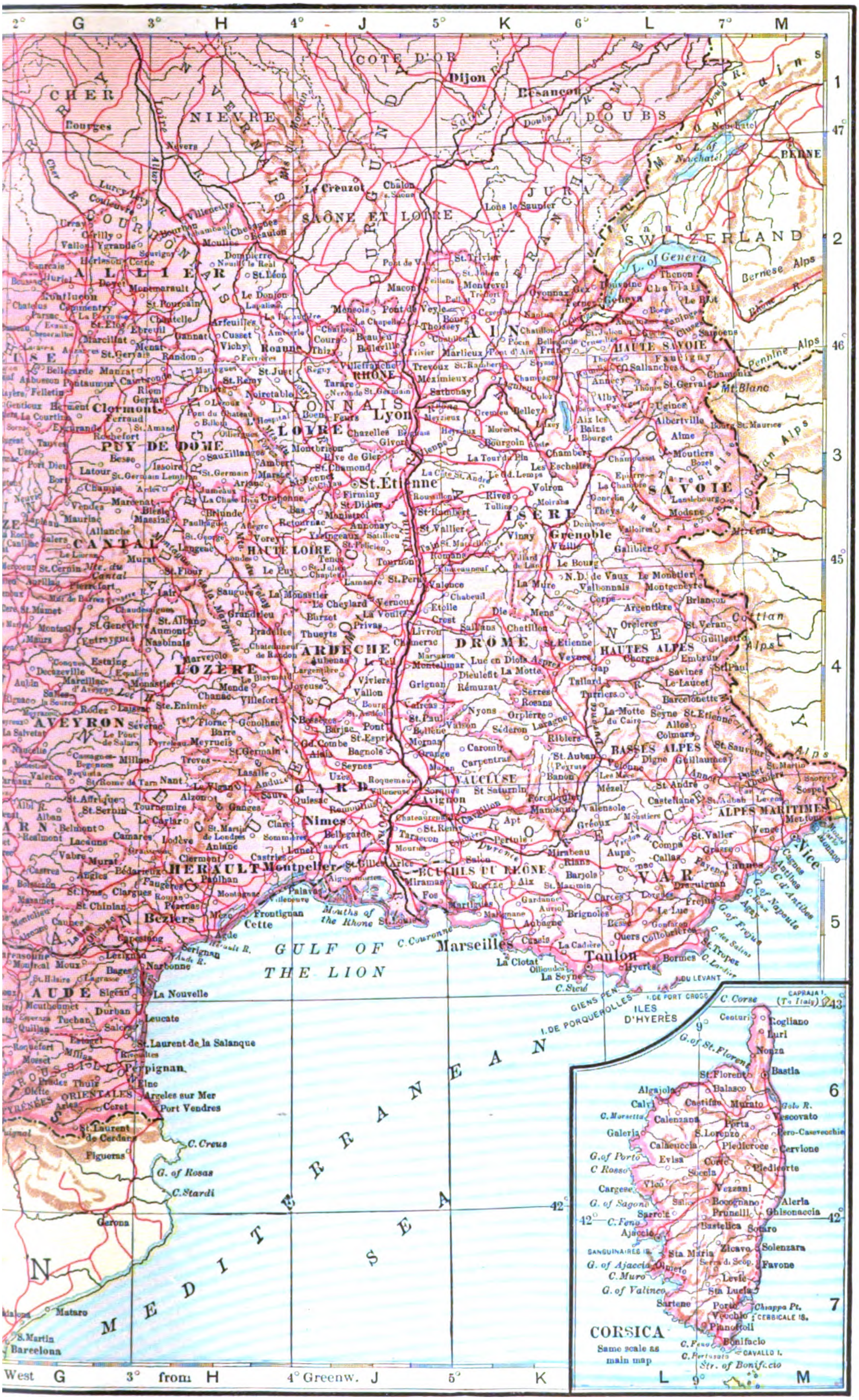
Announcement was made March 20, by J. P. Morgan and Co., of the completion of arrangements for the issuance in the United States of $100,000,000 of French government two-year 5½ per cent notes. The notes were to be offered at a price yielding somewhat more than 6 per cent. The French government had pledged securities having an aggregate value of $120,000,000 of which $20,000,000 consisted of American stocks and bonds and obligations of the Canadian Pacific Railway Company. The remainder was composed of bonds of neutral countries, Canadian provinces, the state of Berne, Switzerland, the city of Stockholm, bonds and shares of Spanish railway companies, and of the Suez Canal Company. See Canals; Financial Review; Flood Prevention; Taxation.

Railways. Owing to the vast increase in the prices of necessary materials, especially coal and metallurgical products including engines, rails, and machinery, the operating expense of the French railways since the beginning of the war increased enormously. There were also increases in salaries and wages for employees beyond those received before the war, for pensions, and also increases due to various forms of social legislation. As a result extraordinary deficits were produced amounting in 1916 to 353.5 millions of francs and the estimates for 1917 based on the first four months of the year about 591,000,000 francs, or 247,000,000 more than in 1916. Consequently, the government and the various companies proposed an increase in rates as the deficits had to be provided for by the government in its annual budgets. The government bill proposed an increase of 15 per cent in transportation rates on the main lines and on the two Paris belt lines. Provision was also made for the distribution of the increased income and for future reduction of the rates after the close of the war. Throughout Europe, there had been, previous to 1917, a general increase in freight rates due to increased operating expenses, and there were economists in France who believed that even the proposed increase



FRANCE

SOUTHERN PART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Chalon s. Saône
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Montluçon
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Annecy
RHONE
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LOIRE
St. Étienne
LYONNAIS
Clermont Ferrand
PUY DE DOME
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Avignon
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ALPES MARITIMES
Nice
Menton
HERAULT
Montpellier
Beziers
Cette
BOUCHES DU RHÔNE
Aix
Marseilles
VAR
Toulon
Cannes
Mouths of the Rhone
GULF OF THE LION
AUDE
Carcassonne
Narbonne
Perpignan
PYRENEES ORIENTALES
Figueras
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Barcelona
Mataro
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ILES D'HYERES
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would not be able to put the railways on a paying basis.

GOVERNMENT. Under the present constitution, the president is the executive, assisted by a cabinet responsible to the Chamber. The legislative power is vested in a parliament, or National Assembly, composed of a Senate and a Chamber of Deputies. The president, elected by the National Assembly by an absolute majority of votes for seven years, chooses his own cabinet; ordinarily, but not of necessity, selecting from among the members of the two chambers. The Senate is made up of 300 members aged not less than forty years, and elected by delegates for nine years; the Chamber of Deputies is made up of members elected by direct popular vote for four years, 1 to every 70,000 inhabitants. The president from 1913-20 is Raymond Poincaré. The members of the French Cabinet at the end of 1917 were as follows: Premier and Minister of War, Georges Clemenceau; Foreign Affairs, Stephen Pichon; Justice, Louis Nail; Interior, Jules Pams; Finance, Louis Klotz; Marine, Georges Leygues; Commerce, Etienne Clementel; Public Works, Albert Claveille; Munitions, Louis Loucheur; Instruction, Louis Lafferre; Colonies, Henry Simon; Labor, M. Colliard; Provisions, Victor Boret; Blockade and Invaded Region, Charles C. A. Jonnart.

Clemenceau, the veteran premier and minister of war (he is seventy-six), will have the assistance of three under-secretaries, chief of them being Senator Jules Jeanneney, whose title is chief of the general administration, and who has a seat in the Council of Ministers. Of the new cabinet, Clemenceau, Pichon, Jonnart, and Pams are senators, and two are not members of parliament (Claveille and Loucheur). The rest are deputies. Clementel, Claveille, and Loucheur were in the outgoing cabinet and retain the same portfolios. Clementel was Minister of Commerce in 1905 in the Rouvier Cabinet and has held that portfolio in three other cabinets, besides being Minister of Agriculture twice under Barthou and Finance Minister under Ribot in 1917.

Klotz was Finance Minister in the cabinets of Caillaux, Poincaré, and Briand (1910-11). Pams was Minister of Agriculture in the cabinets of Caillaux and Poincaré. Lafferre was Minister of Labor with Briand (1910). Leygues was Minister for the Colonies in the Sarrien Cabinet (1906). Boret is chairman of the Agricultural Committee of the Chamber of Deputies. Colliard represents a district of the department of the Rhône. Only one of the members of Clemenceau's new Cabinet was a member of his previous cabinet—Stephen Pichon, who had become prominent during the Morocco controversy and whom he made Foreign Minister, a post Pichon afterward held in the cabinets of Briand (1909-10) and Barthou (1914). In Clemenceau's first ministry, organized October 23, 1906, were Briand, Barthou, Viviani, Guyot-Dessaigne, Caillaux, Gen. Picquart, Thomson, Ruau, Millies-Lacroix, and Doumergue.

Politically interesting features in connection with the new cabinet are the abolition of the Ministry of Agriculture, which becomes an under-secretaryship under the Minister of Food Supply; and of the under-secretaryship of Fine Arts, deemed unnecessary in wartime. The Cabinet decided to appoint the following under-secretaries of state: Interior, Albert Favre, an Independent Socialist deputy; Navy, Deputy Jules Cels, especially charged with submarine problems; Military Justice and Pensions, Deputy Edouard Ignace; Sanitary Department, Justin Godart, a deputy who is reappointed; Aviation, Jacques Dumesnil (reappointed); Merchant Marine, M. Lemery, deputy for Martinique. Deputy Durand having refused the post of Minister of Agriculture and that department having been attached to the Ministry of Food Supply, M. Villegrain was appointed under-secretary, especially charged with general service connected with corn.

HISTORY

THE GREEK QUESTION IN JANUARY. In January the Chamber held several secret sessions during which the entire policy on the Eastern Front was discussed, especially the affairs of Greece. The government's course in Greece had caused great dissatisfaction from the first and criticisms found their way into the press in spite of the strict censorship. It was characterized as weak and vacillating. Nevertheless, after the debate in the course of which in a speech that lasted six hours, M. Briand explained and justified the government's policy, the Chamber gave its approval and some of the speakers even said that a more aggressive policy in Greece would have been undesirable. The French press sustained this decision but among the people at large the opinion still held that the government had been unduly considerate of Constantine, and was seriously lacking in energy. There were also complaints that, in spite of the conference of the Allies at Rome, neither the English nor the Italians were taking the same share as the French in the expedition of Salonika. See GREECE, *History* and WAR OF THE NATIONS.

CABINET CRISIS. Opposition arose in Parliament to a measure framed by Gen. Lyautey requiring the reëxamination of men exempted from draft and the enrollment of priests in the fighting units. On March 14, in reply to an interpellation on the aviation service, Gen. Lyautey declared that while he was ready to give explanations, he believed they endangered the national defense even when given in secret session. This occasioned a storm of protests in the Chamber and the general at once resigned. Outside Parliament this caused much regret for Gen. Lyautey had the confidence of a large part of the public. He was subsequently sent to Morocco to continue his very successful work of organizing and pacifying the country. M. Briand, the premier, being unable to replace Gen. Lyautey, and finding great difficulties in the reconstruction of the ministry, placed his resignation in the hands of the president, who at first invited M. Deschanel to form a ministry, but upon the latter's refusal summoned M. Ribot, who on March 19 succeeded in forming a cabinet. He offered the portfolio of foreign affairs to M. Briand, who refused it, but six other members of the Briand cabinet accepted office in the new cabinet. The ministry was composed as follows: M. Alexander Ribot, Prime Minister and Foreign Affairs; M. René Viviani, Justice; M. Paul Painleve, War; Admiral Lacaze, Marine; M. Albert Thomas, Munitions; M. Joseph Thierry, Finance; M. Louis J. Malvy, Interior; M. Jules Steeg, Public Instruction; M. Georges Desplas, Public Works; M. Étienne Clémentel, Commerce; M. Fernand David, Agriculture; M. Maurice Viollette, Food and Supplies; M. Léon Bourgeois, Labor; M. André Maginot, Colonies. According to party affiliations, the ministry contained three Moderate Republicans, three Radicals, one Radical Socialist, three Independent Socialists, and one Unified Socialist.

The crisis seemed exclusively to have been a parliamentary one and not due to any pressure of public opinion. Power now passed to the conservative Republican group. M. Ribot, who was a representative of that group and one of the most distinguished of the older public men, was seventy-five years of age and had begun his career under the Second Empire, always advancing along the line of moderate radical views. He was foreign minister under De Freycinet, continuing to hold that post under Loubet, and he was for a short time prime minister on several occasions, 1892-93 and 1895, and had been finance minister since October 30, 1915. In 1914, a few months before the war, after the general elections, he was invited to form a ministry but Parliament refused to give it confidence even for a single day and it was known as the One-Day Government, being the first instance of that kind in the history of the Republic. The new premier announced his policy on March 21, pledging the government to fight until Alsace-Lorraine was regained. The Chamber voted approval by 440 and 59 abstentions; there were no negatives.

THE COMING OF THE AMERICANS. Upon the declaration of war by the United States the French president addressed a cordial letter to the president of the United States expressing the appreciation of the French people. There was a demonstration in Parliament on April 5, and this was followed by a display throughout Paris and other cities of the American flag. The local councils assembled in many cities and voted resolutions welcoming the Americans. A special day was fixed called the United States Day. The ceremonies began with the raising of the American Flag on the Eiffel Tower on the afternoon of April 22. The flag was saluted by twenty-one guns.

CHINESE IMMIGRATION. In the spring of 1917 it was estimated that the Chinese who had been exported from Tientsin for more than a year past numbered over 100,000. They consisted chiefly of skilled and partly skilled laborers and they had been sent from China at the rate of over 1000 a week. An equal or greater number came also from Indo-China. They were employed mainly in the munition factories and at about double the wages that they received in China which, however, was a very small amount since it was estimated that partially skilled laborers received in Chinese factories not more than 12½ cents a day.

NEW COMMERCIAL POLICY. Early in the summer the French government announced to the cabinets of the Allied and neutral countries that it intended to denounce all the treaties of commerce and navigation and all clauses in the other treaties that could in future restrict its liberty of action in the pursuit of its economic policy. This course was taken as the first step in carrying out after the war the entirely new policy upon which the governments had resolved. By it France broke completely with the past. The argument for putting an end to the most favored nation clause was that it made it absolutely impossible for France and England to resist German trade aggressions because it deprived those two countries of the means of discriminating against Germany. The latter power, it was said, had managed to escape the inconvenience of the most favored nation clause by interpreting it according to "specifications" of a very minute character and the United States had arrived at the same result by another method, requiring that any one wishing to obtain the most favored nation treatment must render a fair equivalent. The French policy had broken down even before the war.

THE STOCKHOLM QUESTION. The Socialist Congress which closed its sessions on May 28 saw a bitter debate on the Stockholm question but in the end the decision was in favor of sending delegates to Stockholm to define the war aims and to prepare for a full meeting of the International, in which German Socialists would probably take part. Thus the efforts of the small group which favored the old international ideals were at length successful. This minority ever since the declaration of war had struggled for the resumption of international relations even with the German Socialists. They had made some headway before the Russian revolution but they were still in a minority. The Russian revolution carried them on to success. The change of views on the part of the majority, which accepted finally the Stockholm proposal, was explained by saying that events had entirely altered the situation. The Russian revolution had severed France as well as Russia from an imperialistic policy. While the majority of the Socialists had been strongly on the side of the Entente Allies they felt some alarm at certain ambitions, especially those which the Russian aristocracy cherished and which might embark the Allies on a course of aggression. The majority were not hopeful, however, of any very important result from an international meeting of Socialists during the war. Some of them held that the only way of shortening the war was by a German revolution.

Outside Socialist circles there was much opposition to the presence of French delegates at a conference which German representatives would attend. The government decided against it. On June 6 the question of giving passports to Socialists for Stockholm was discussed in the Senate and after a speech by M. Ribot in which he said that France ought not to enter into any discussion with her enemies and that it was not time for any talk of peace, the Senate voted confidence unanimously. For this attitude, the government was sharply criticized in certain quarters. On June 1, during a noteworthy session, the Prime Minister had replied to these criticisms saying that if there was to be a peace it must be a peace made by the whole of France and not by any single party; that to authorize this Socialist delegation was to endanger the stability of opinion among the people and in the army; that patriotic Socialists themselves, such as Vandervelde, were opposed to it; that it would weaken the responsibility of the government; and that it was not the time for such an adventure. He went on to deny that the attitude of Russian socialism in general was hostile to the war, because of the discovery of certain secret treaties that had been made between the French Republic and the czar. He characterized as infamous the report that previous to the war there had been agreements between France and Russia of an aggressive character and he declared his intention of publishing, with the consent of the Russian government, the text of the actual agreements. He caused a sensation by announcing that behind the strikes which had been disturbing public confidence in France there were forces working in the dark. Men whose identities were concealed were trying to cause the impression abroad that these strikes in France were leading to a revolution. He said that the government had taken and would continue to take all necessary measures to prevent such plots and that it would propose a bill to Parliament authorizing the punishment of second offenders who were shut out of Paris by the law establishing the state of siege but who nevertheless had come back because the law was accompanied by no penalty.

Alsace-Lorraine. On June 5 the long secret session of the Chamber of Deputies came to an end. It began after a debate had arisen on the subject of the government's refusal to give the Socialists passports for attending the international meeting at Stockholm. The debate soon involved questions of war aims and Franco-Russian diplomacy. The question of Alsace-Lorraine was also debated. The Chamber voted confidence in the government's determination to secure the restoration of Alsace-Lorraine and indemnity for the damage done there. In the resolution voting confidence the Chamber endorsed the protest of the Alsace-Lorraine Deputies in the National Assembly of 1871. These representatives had called upon France and the whole world to witness that they proclaimed their right to remain members of the French nation. The resolution declared that the invaded territories must be liberated, Alsace-Lorraine returned to France, and the damage done repaired. Its concluding terms were as follows: "Removed from all thought of conquest and of the enslavement of foreign peoples, the Chamber relies upon the efforts of the Armies of the Republic and of the Allied Armies to enable it—when Prussian militarism has been struck down—to obtain lasting guarantees of peace and independence for peoples great and small in the already prepared organization of a society of nations. It trusts that the government will obtain these results by the coördinated military and diplomatic action of all the Allies, and, rejecting all amendments, passes to the order of the day." Representatives of every group signed the resolution with the exception of the Unified Socialists, although some of them voted for it. The minority resolution, which was defeated, condemned secret diplomacy, and all policy of imperialism and conquest, and adopted the peace formula of the Russian government—no annexations or indemnities and the right of the peoples to dispose of themselves.

Debate on the April Offensive. During the first week in July the Chamber held secret sessions for the discussion of the charges that the offensive of April 16 had been badly handled and had ended in defeat. The debate was closed in the public session of July 8 when the government, while admitting that mistakes had been made, declared that substantial gains had resulted from the advance and that it was in effect a victory. It declared that the officers responsible for the mistakes, including Gen. Nivelle, had been relieved of their commands, and investigation was still going on for the purpose of fixing the responsibility. Gen. Nivelle had been replaced by Gen. Pétain on May 15, and at the same time Gen. Foch became chief of staff. In the course of the discussion the premier declared that the government would not permit a press campaign on behalf of Germany's terms of peace. These terms would be a dishonor to France and advocacy of them in the press would weaken the public morale. The sanitary department had also been criticized and was under discussion in the secret session. The government received a vote of confidence, 442 to 21.

The Submarine Peril. France shared with her Allies the alarm over the grave danger from the submarine situation, though in certain quarters there was a tendency to make light of it. Public opinion was aroused after the torpedoeing and sinking of the *Danton* on March 19 and an interesting discussion took place in the Chamber early in June when figures approved by the Admiralty were read by M. Cels, which made a profound impression upon the deputies. The main points were as follows: He showed that while the tonnage destroyed during the first three months of 1915 was 132,656 it soon rose to nearly three times, and after the middle of 1916, nearly four times, that figure. Then, during the last three months of 1916, it increased to the alarming figure of 926,617 and during the first three months of 1917, to about 1,300,000. Finally, in the month of April alone, the losses were 850,000. Thus the German submarines had sent to the bottom as large a number of merchant vessels as the entire merchant fleet of France at the beginning of the war. Then, as to the possible rate of construction, M. Cels declared that, in 1916, taking the highest credible figures, the construction was 1,783,000 tons, of which the Allies had not acquired more than 1,200,000. Assuming that the rate of construction has been 100,000 tons a month, one might safely conclude that so long as the submarine sank only 300,000 every three months the Allies remained masters of the situation; but the moment that the sinkings ran beyond that rate the situation became serious. Thus, down to the middle of 1916, the Allies were not in danger from this cause; but from that time on the danger had become increasingly serious. He added that on October 12, 1916, the two committees of war and merchant marine met after the sinking of the *Gallia* and appealed to the minister of the navy. The latter declared that he regretted the situation but could not help it. Moreover, M. Cels pointed out that Germany with her thirty million tons of steel and one hundred and sixty million tons of coal was independent of external aid for the carrying on of the war; and that while the blockade embarrassed her in the matter of food it really was not having a decisive effect upon the war.

After a long debate on the subject in the course of which there was sharp criticism of French measures of defense and especially of the lack of skill shown by the officers in meeting submarine attacks, the minister of marine, Admiral Lacaze, made a spirited reply. He said that it was impossible to praise highly enough both the officers and the men, and that it was impossible to separate the officers from the men for they were equally deserving. As to the criticism of the navy, he said it was inexact and exaggerated; that the service had been greatly improved in the conduct of the submarine warfare, several new and efficient administrative organs having been created; that there was an official committee of investigation which passed under its survey all the incidents on sea; and that the number of submarines which had recently been sunk, especially in the month of May, was considerable. See SUBMARINE OPERATIONS.

THE FALL OF THE RIBOT MINISTRY. A cabinet council was held on September 7 and at the end of it the ministers handed in their resignations to the president of the Republic. On September 9 M. Ribot was charged with forming a new ministry, but having failed to do so he definitely resigned on September 10 and M. Painlevé succeeded on September 12. In the new ministry M. Ribot was made minister of foreign affairs. The chief reason for the fall of the cabinet was its inability to retain the support of the Socialists, but it had also been weakened by attacks on it for some time past on the ground of lack of vigor. Many believed that it did not show sufficient energy in dealing with disloyal and *défaitiste* propagandists. Various scandals, notably that of the *Bonnet Rouge* (see below) had begun to figure largely in the press, and M. Louis Malvy, minister of the interior, had been attacked on all sides for complicity in that affair and for too great leniency toward other enemies of the state. In order not to embarrass the government M. Malvy had resigned on August 31, protesting at the same time that the charges against him were calumnies circulated by a reactionary press. It seemed to be generally believed, however, that he had been either grossly imprudent or downright disloyal in associating with men engaged in treasonable or pacifist activities. M. Ribot's attempt to reconstitute a new ministry failed on account of the refusal of the Socialist group to take part in it. M. Painlevé, in insisting that M. Ribot should hold office in the new ministry, also alienated the Socialists, who refused absolutely to take any part in a ministry of which M. Ribot was a member. Meanwhile, M. Albert Thomas, the Socialist minister of munitions, resigned his office in order to avert a division in his party. Thus, for the first time since the beginning of the war, the government was without a single Socialist member. This was taken as a sign that the policy of the Sacred Union (*Union Sacrée*), whereby all party issues were to give way to the great aim of winning the war, was, so far as the Socialist group was concerned, definitely abandoned. Nevertheless, the Socialists promised to judge the new ministry by its deeds without regard to the fact that they were not represented in it.

The first step of the new ministry was to constitute itself into two committees: (1) A Committee of War, whose active members were the prime minister, who was also minister of war, the ministers of foreign affairs, the navy, and armament, respectively, and the four minister-secretaries of state; and (2) an Economic Committee, whose active members were the minister-secretary of state, M. Paul Doumer, president, and the ministers of commerce, agriculture, colonies, transportation, armament, and provisions, respectively. The total membership of the ministry was nineteen.

The leading idea in the minds of the majority during the ministerial crisis was the need of a thorough going campaign against those secret forces which had produced the recent scandals (see below). M. Clemenceau, in his newspaper, *l'Homme Enchainé*, had been foremost among the journalists who attacked those scandals and demanded their suppression, and it was his denunciation of the conduct of M. Malvy that was chiefly responsible for the latter's downfall. M. Ribot's programme when he was trying to reconstitute the ministry had as its chief feature the punishment of crimes against the national defense and the determined search for the guilty parties. It was thought by many that M. Painlevé was more likely than his predecessor to carry this policy into vigorous effect. In his announcement of policy he assured the country that justice would be enforced against evil-doers without fear or hesitation.

ATTITUDE OF THE FRENCH SOCIALISTS. The great issue in the French Socialist party was between the national defense and the restoration of the old international socialism. This was one of the matters that were to come up at the national congress at Bordeaux on October 16. The French Unified Socialists comprised one-sixth of the entire Chamber of Deputies, and, owing to their vigor and discipline they had been more active than any other party in carrying out their programme. The national congress was to be a trial of strength between the two main sections of the party, that is to say, the division which placed the nation above everything else and the section which believed that the future of internationl social democracy was more important. M. Albert Thomas, former minister of munitions, outlined the situation as follows: When the war broke out the party was unified and it shared political responsibility in the cabinets of Viviani, Briand, and Ribot. The division between the majority and minority did not appear until the spring of 1915. At this time, that is to say, October 1, 1917, there were as many shades of difference between groups within the party as between groups of the Parliament itself. The Socialist party, according to M. Thomas, now had its Right, its Centre, and its Left. The minority Socialists had come forward in 1915 because, believing the war to have reached the stage of deadlock at the Front, they hoped to end the hostilities by other means; and the Russian revolution, together with the attitude of neutral Socialists, seemed to hold out a promise of success. They therefore bent all their energies to the restoration of the old International. During the summer and fall of 1917 the Centre which comprised majority and minority members directed the policy of the party. At the recent ministerial crisis the party refused its support to MM. Ribot and Painlevé for the reason that the war in their opinion required the young and energetic government of new men who would shake themselves free from party entanglements. They demanded a cabinet on the British model for the purpose of winning the war. The two main questions which were to come up before the Bordeaux congress were the Stockholm conference and Socialist participation in the government. The real question, however, that overshadowed all others was to be that of peace. The groups represented by M. Thomas wished to bring the war to a victorious issue while at the same time insisting that absolute justice should be maintained by the Allies. Their idea was that no war can be really victorious which is not really democratic. The question then was whether the congress would decide for peace or for war.

As the year advanced it was evident that the Socialists came more and more under the influence of the element that had at first been in a minority, and they were offended by the government's refusal to grant passports for the Stockholm Conference. The debates on the Stockholm question in the summer and autumn brought out the fact that only a small group under MM. Guesde, Groussier, Bracke, and others were openly opposed to representation at the conference.

The Bordeaux congress rendered its decision as follows: The majority resolution decided for representation at Stockholm, the support of the war credits, and participation in the government, and urged the revision of the war aims of the Entente Allies. It was carried by 1552 votes. The minority voted a resolution to the same purport except that it imposed conditions on the voting of the war credits and on the participation of the Socialists in the government. The votes cast for it numbered 831. A resolution offered by M. Brizon, who represented the Kienthal section, demanded immediate peace. It received 385 votes. A still more extreme group numbering 118 voted against supporting the war credits. Abstentions numbered 85.

French Diplomacy. Some points were brought out in regard to the diplomacy of France during the war in the course of a debate in the Chamber on October 12, when a member made a long address in which he declared that a more energetic political and diplomatic course was necessary. He also asked the government to give the country more exact information as to current events in order to enable them to defend themselves against misrepresentations on the part of the enemy. In long wars, he said, history had shown that the political action was as important as the military, that it was the government as well as the army that led the people to victory or to defeat. After his address a Socialist deputy blamed the ministers for the mistakes of diplomacy during the war. He reproached them in particular for keeping the knowledge of actual conditions from the Chamber. He condemned secret diplomacy and demanded that diplomatic methods should be modernized. This brought M. Briand and M. Ribot to their feet in defense of their course as ministers of foreign affairs and in defense of the representatives of France abroad. The chief points in these addresses were as follows:

The diplomacy of France had been in marked contrast to that of Germany and its success was in equal contrast. As to modernizing diplomacy Germany had certainly done that and what had been the success of German modern methods? It had been everywhere compromised and discredited. It had been detected in all kinds of dishonorable operations and branded with shame. The result of German diplomacy was that Italy had come to the side of the Allies, then Japan, then Rumania, then the United States, until, as M. Briand said, nearly all the countries of the world had joined against her. Now this, he declared, did not come about by accident. French diplomacy certainly had something to do with it. As to open diplomacy, while the words were attractive, they really meant nothing, for the moment a country should declare that its diplomacy would thenceforth cease to be secret the task before it would be easy indeed, for there would be no diplomacy at all. In the presence of dangerous and ruthless foes, it was necessary that French diplomacy should proceed with great prudence. Its success could be inferred from the high praise bestowed upon the French representatives in the United States and in neutral countries. Such men as MM. Cambon, Barrère, and Jusserand had nobly represented France and had been of the greatest service. M. Briand declared that in spite of the gains of Germany in one direction, it must not be forgotten that she was a nation besieged and cut off from all the rest of the world. She must depend on others for the means of living in the future. At the present turn of affairs, economic conditions were just as pressing as military. No matter how extensive a country's territories might be, if it were cut off from the rest of the world it must perish. Further advances on Germany's part in the war would result in cutting her off from the chance of securing the means of life in the future. In the economic field the Allies had an overwhelming superiority. Their victory was certain. The diplomatic representatives of France deserved full credit for the large share they had had in bringing this state of things about. M. Briand, however, agreed that at this time greater diplomatic and political activity on the part of the government was necessary. M. Ribot expressed the same opinions. He, too, believed that the economic situation on the part of Germany was most serious, pointing out that the countries which had joined against her were the very ones which down to that time had been supplying her with raw materials. Germany at the present time, he said, was trying to deceive the Allies. Austria had held out hopes of great concessions to France, thinking that she might turn Italy against France. Germany had let it be understood that if France would come to terms with her she would give back Alsace-Lorraine. France had not fallen into either of these traps. Then followed the announcement of the German government through von Kühlmann that Alsace-Lorraine would never be given up. This had the advantage of clearing up the situation. At present everything was definitely understood. France was fighting for victory and for Alsace-Lorraine. Germany had circulated the charge that it was France alone that prevented peace because of her insistence on the recovery of Alsace-Lorraine. Here again the trick was unsuccessful. British statesmen had declared the rightfulness of France's purpose, and the King of Italy had telegraphed that his country was wholly on the side of France. The Allies continued to be perfectly united. After the debate the Chamber passed a resolution to the effect that a vigorous, political direction in accordance with plans concerted with the Allies should be given to the war in the new phase upon which it was entering and that it was necessary to introduce promptly into the organization and methods of work in the foreign office as well as in the choice of diplomatic and consular officers the reforms which the experience of the war had shown to be necessary.

Further points brought out as a result of the discussion of French diplomacy in Parliament and in the press were that the main difficulty was not so much in the sort of agents chosen as in the lack of initiative on the part of the government and Parliament. Germany, it was said, had often had the advantage of France in diplomacy despite the discredit which was attached to the German diplomats. This was attributed to the better organization of the German service. In criticizing the French service a deputy declared that men were often chosen for it who had not been engaged in any work that fitted them for their office. He also complained of the small number of commercial attachés and said that the salaries both of the diplomats and of the consuls were starvation wages. As a result, the agents were often ignorant of the most interesting parts of the country to which they were accredited. In general, the French diplomatic service was ably conducted, but in order to keep up the good qualities of its representatives it was necessary that the government should be on the alert. It should make a study of its representatives and their needs and it should seek to encourage their activities.

CANADIAN FORESTERS. According to a report published in November there were 10,000 professional Canadian foresters in France. The work already done had been of the greatest possible value. They had supplied the wood for bridges, plank roads, building, and wagon-making. They had gone about the work in a scientific manner, using the heavy timber for construction and the small trees for burning, and leaving sufficient growth for the future. In this work they were divided into companies of 175 men each. Each company lived in its own little village, had its shop and saw-mill, and employed 500 German prisoners. According to the report the work was done in the most economic and scientific manner possible.

FALL OF THE PAINLEVÉ MINISTRY. After a duration of only two months the Painlevé Cabinet was forced to resign as a result of an adverse vote on the government's proposal that an interpellation on the subject of the scandals should be deferred. The crisis was variously interpreted. In certain quarters it was regarded as a sign that the country was opposed to the attitude of the government toward peace. A debate in the Chamber on October 15 turned on the question of the aims of peace. Members of the ministry had declared that in addition to the return of Alsace-Lorraine to France certain territorial guarantees were required. These guarantees amounted to what was called a neutralization of German territory in the valley of the Sarre and the right bank of the Rhine. In the debate a deputy requested the government to state precisely its policy and to let the Chamber know whether it remained the same as before. M. Barthou declared that the governmental aims were already well known. Alsace-Lorraine had been invaded and must be returned to France. Guarantees were necessary. When he was asked what guarantees, he replied that it was impossible for the government at this time to determine them. It was too soon to discuss theoretically the details of the terms. These terms had been discussed in secret committee and it had been a Socialist who had broached them in the committee. M. Renaudel, who had spoken of these territorial guarantees or neutralizations, said, however, that the force that was to carry them out was the society of nations. M. Barthou declared that it was obvious that right was not a sufficient support for a nation against Germany. Right had been on the side of Belgium, Serbia, and France, but it did not save those countries. Right at the present time, said he, was of value only so far as it was supported by the military; France and the claims of France could only triumph by a victory. The Socialist deputy, M. Thomas, thereupon interposed. He said that his party accepted the declaration of the government that France at the moment of victory would demand only her rights but his party was anxious to know whether the policy of the government now went any further than that. The Socialists did not depart from their previous view that all sacrifices should be made in order to insure victory; but supposing victory were complete and France could enforce her rights, would it enforce them according to principles of justice or by violence? When France had obtained the guarantees of the durable peace was she going to demand territorial guarantees, that is to say, annexations and conquests? That was the question in answer to which the Socialists wish the government to make a definite statement.

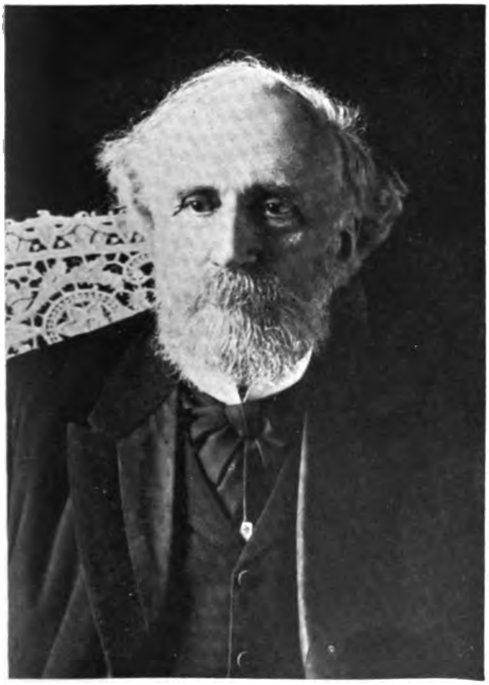
M. Painlevé replied that there was nothing uncertain in the ministerial declaration. He had already said that no consideration would prevent France from going to the limit of her rights. He had already said that the war would be carried on till victory was secured and a victory that would give France her rights. The results of victory could only be obtained by adopting the means that would bring victory. At the close of the discussion the vote of confidence was carried by 288 votes against 137. Thus the majority had diminished. Nevertheless, it could not be maintained that this was the true cause of the fall of the ministry. The crisis came about as a result of the scandals concerning which the government had not seen fit to make a frank declaration to the Chamber. Politically speaking, they were of secondary importance, but the rivalry of parties had taken advantage of them. As a matter of fact, it seemed that the Sacred Union had come to an end, for the contest between parties was growing more and more bitter, chiefly from the endeavors on the part of each group to be the successful competitor in working out a plan for peace.

The immediate occasion of the ministry's fall was as follows: On November 13, the question of the government's course in dealing with the cases of disloyalty and treason was debated and an interpellation on that subject was moved. M. Painlevé finally demanded that the interpellations be put off till November 30. This question was voted upon and the government lost by 186 to 277.

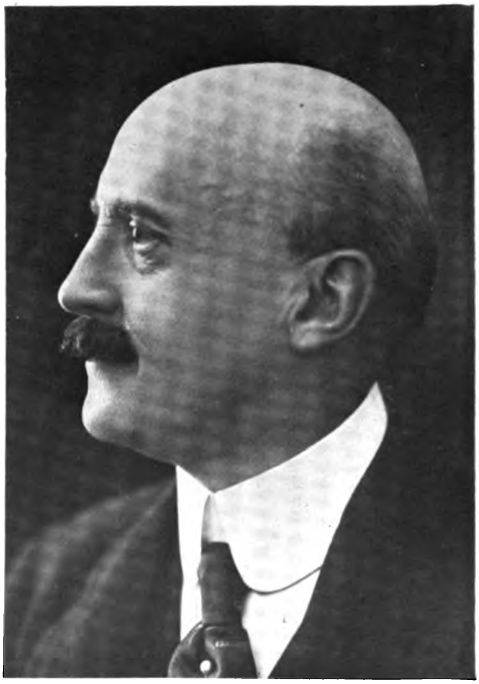
THE SCANDALS. The press abounded in direct charges or insinuations against persons of more or less prominence on the ground of disloyalty or treason. As the year advanced many arrests were made and portions of the evidence against the accused, together with their state-

GEORGES CLEMENCEAU
Premier
Appointed, November 16, 1917

GENERAL PÉTAIN
In Supreme Command of the French Armies



ALEXANDRE RIBOT
Appointed Premier, March 19, 1917



JOSEPH CAILLAUX

FOUR MEN PROMINENT IN FRANCE DURING 1917

ments on their own behalf, were made public, but no decision had been reached in any important case at the close of the year. The most notorious affairs that were at that time pending were as follows: The Malvy case, the affair of the *Bonnet Rouge*, of Bolo Pasha, Joseph Caillaux, Loustalot, Turmel, Humbert, Lenoir-Desouches, Paix-Séailles, and Leymarie. Of these, according to last accounts, Malvy, Caillaux, Loustalot, Humbert, and Turmel, who were members of parliament, were to be tried by the high court. The others were to be tried by court martial. Space is lacking for more than a bare outline of these affairs, which, moreover, were not important individually, but only as indicating when taken together a menace to the public morale. It was generally believed that these disloyal activities were increasing and that the government not only was culpably lax in dealing with them but that some of its members had been in dishonorable relations with the evil-doers. The indignation over these conditions was the chief factor in bringing into power M. Clemenceau, who had been for a long time back the chief assailant of *défaitiste* intrigue and ministerial complaisance.

The *Bonnet Rouge*, which was at first an apparently loyal paper and contained among its contributors many well known men whose patriotism was unquestioned, gradually assumed an attitude that aroused suspicion. In a veiled manner it conveyed impressions tending to the advantage of the enemy. It was thought to be subsidized by funds secretly derived from enemy sources. Its manager, M. Duval, whose frequent journeys to Switzerland in 1916 drew the attention of the police, was placed by them under surveillance in May, 1917, and soon afterwards, on his returning from one of these trips, they found in his possession a check for 125,000 francs, which they took from him and photographed. They then restored it to him, without notifying either the Ministry of War or the minister of the interior. For this negligence the responsible military official was reprimanded and M. Leymarie, chief of the Bureau of Public Safety, was obliged to resign. Meanwhile, the authorities began an investigation into M. Duval's financial errands in Switzerland and it was found that he had received large sums of money from German sources. He was charged at first with "commerce with the enemy" and later with the more serious crime of "intelligence with the enemy." The case was still under judgment at the close of the year. Meanwhile the editor of the *Bonnet Rouge*, one Almereyda, alias Vigo, was found to have received from Duval a check for 200,000 francs and was arrested on the charge of complicity with the latter's operations. The next step was the seizure of a chest of papers belonging to the *Bonnet Rouge*, which were thought to contain incriminating documents. Soon afterwards Almereyda was found dead in prison, with marks upon his throat indicating strangulation, which he had apparently achieved by means of a shoe-string attached to the foot of his bed. The circumstances were obscure; there had been gross negligence on the part of the prison officials, who were subsequently disciplined, and there was doubt whether he had killed himself, been murdered, or died a natural death. The three medical experts who reported on the cause of death decided in favor of suicide. M. Leymarie was arrested later on the charge of intelligence with the enemy and his case was pending at the close of the year.

In the affair of M. Humbert, a member of the Senate, a newspaper of a very different character was involved, namely the *Journal*, which bore an excellent reputation. M. Humbert, the director, obtained the funds for its support from Bolo Pasha (see below), but, according to his own account, at a time when there was no reason to suspect the latter of being an enemy agent. When charges were brought against Bolo he immediately took steps to rid the paper of the latter's interest and he afterwards sold it to Lenoir-Desouches. Suit was brought against M. Humbert to ascertain whether in the transactions with Bolo and with Lenoir-Desouches he had been guilty of misconduct, and the Senate, with M. Humbert's approval, voted to suspend his parliamentary immunity. He resigned the directorship of the *Journal* on December 8. Lenoir and Desouches were also involved.

The affair of the deputy M. Turmel arose from the discovery in his locker at the parliamentary building of a check for 25,000 francs in regard to which his somewhat contradictory explanations aroused suspicions of commerce with the enemy. His parliamentary immunity was suspended and the case was pending at the close of the year. Another deputy, M. Loustalat, was under charges of intelligence with the enemy on account of his interviews in Switzerland with the ex-khedive of Egypt, Abbas Hilmi, reputed to be a German agent. M. Paix-Séailles was held on the charge of having revealed information likely to aid the enemy in the field. The three most conspicuous cases involving individuals, namely, those of M. Louis Malvy, Bolo Pasha, and M. Joseph Caillaux are outlined in the following paragraphs.

THE MALVY CASE. The charges against M. Malvy which had been made with more or less definiteness in the press for a long time past were brought to the notice of the Senate in an interpellation by M. Clemenceau on July 22. On October 4 a letter addressed to the premier by M. Léon Daudet, director of the *Action Française*, denouncing M. Malvy in unmeasured terms as a traitor to his country was read at M. Malvy's own request to the Chamber of Deputies. The government began an investigation and at the close of the cabinet council on October 16 M. Painlevé declared he had reached the conclusion that all charges were baseless. The judicial department was going ahead with the case and the government left it in entire independence but it seemed to be the duty of the government to declare its opinion that the charges were false. This apparent inconsistency in the matter of deciding the case in advance while leaving the courts free to pursue it aroused much criticism and brought forth the comment of M. Daudet in the *Action Française* that it was "stupefying." Early in November the authorities searched the residence of M. Malvy's former director, M. Leymarie, and seized a number of documents. Suit was brought against the latter for commerce with the enemy. On November 23, M. Malvy requested in the Chamber that a committee of thirty-three should examine the charges against him. The Chamber elected a committee of eleven to decide upon this question and it reported favorably. Thereupon the Chamber appointed the committee of thirty-three. On November 29 this committee's report recommending that M. Malvy be placed on trial was submitted to the Chamber which approved it by a vote of 512 against 2. As there was no precedent for such a case a bill was introduced in the Senate to cover it. The specific charges made by M. Léon Daudet were that he had given diplomatic and military information to the enemy, especially in connection with the attack on Chemin des Dames. The case was to go before the high court. In the press attacks on M. Malvy he was accused of being on intimate terms with Almereyda, of relations with Bolo, and of tolerating or conniving at various intrigues against the national defense, in short of a policy of *laissez faire* toward dangerous elements in the state if not actual complicity with them. In his own defense he attributed these attacks to the machinations of his political enemies, pointed to the peace between the social classes and groups which had been maintained under his administration since the beginning of the war, declared his policy had been one of toleration and measure, and specifically denied having any relations with Almereyda or the *Bonnet Rouge* or Bolo Pasha from the time when their true character became known to him.

The Affair of Bolo Pasha. Bolo Pasha was arrested on the charge of attempting to corrupt the French public by funds derived from German sources. The accused who had derived his title from the dethroned khedive had aroused suspicion by his frequent journeys to Switzerland, Italy, and Spain. He was watched by the special police, who found that in his various enterprises he had spent several million francs. Bolo's explanation was that long before the war he had made investments in America and that at the time of his arrest he was in possession of a fortune of seven million francs, all of which was deposited in American banks. He said he had never handled money either in Italy or in Switzerland. The police than caused inquiries to be made in Switzerland and in the United States. In the United States the authorities exerted themselves to the utmost and it was on the basis of the information which they sent to the French authorities that Bolo was arrested. The United States State Department addressed to the French foreign office a telegram to the effect that various sums of money exceeding in all two million dollars had been deposited in the course of 1916 in the name of Paul Bolo who was then in Paris, and that these deposits had been made by the Deutsche Bank of Berlin. A great part of this money had already been remitted to Paul Bolo by transfers on a French bank. Further evidence was accumulated after his imprisonment, and the case was on trial at the close of the year.

Some of the ramifications of the affair have been indicated in preceding paragraphs. M. Humbert, who, as noted above, had obtained money from Bolo in order to assume financial control of the *Journal*, said, when questioned on the subject, that he had inquired into Bolo's antecedents and found that they were good and that responsible people were willing to vouch for him. Among those who did so was M. Monier, first president of the Court of Cassation. M. Malvy had also appealed to M. Monier's endorsement of Bolo in defense of his own failure to suspect him. Upon the arrest of Bolo it was decided to summon M. Monier before the higher council of the magistracy to explain. Dissatisfied with his explanation, the council pronounced the sentence of dismissal from his office. This was the most severe penalty that could be imposed in a disciplinary suit of this nature. M. Monier, previous to the trial, had requested that he be allowed to retire in possession of his rights on the ground of ill-health, but as the rule prescribing this did not apply to cases where officers had been dismissed for cause his application was disregarded.

Bolo's relations with M. Caillaux formed also an element of suspicion in that affair, as noted below. See United States and the War.

The Caillaux Case. In the summer of 1917 M. Joseph Caillaux made his appearance in the Chamber for the first time since the war began. Newspaper attacks on him which had been made from time to time for many months past now increased. Rumors of disloyal activities in Italy, association with pro-Germans, pacifists, and traitors, had long been circulated. The London *Times* accused him of intriguing in Italy on behalf of a German peace. This he publicly denied. Suspicion was heightened by the high praise bestowed upon him by the press of the Central Powers or of circles friendly to them. By French and English journalists he was charged with a campaign of German propaganda in France and elsewhere, including the support or encouragement of a chain of newspapers which in a veiled manner were working in the German interest. Among the papers mentioned were *Le Pays*, the *Agence Républicaine d' Informations*, *Les Nations*, and above all the *Bonnet Rouge*, and many others; and he was said to be more or less responsible for an association of these papers under the name of the Republican League which was designed to carry on a campaign in parliamentary circles. In the Allied press he was spoken of as the most sinister influence in French politics whose return to political power would be disastrous. For a long time M. Caillaux paid little attention to these attacks, treating them as the calumnies of his political enemies. For the most part he contented himself with an occasional sweeping denial. At Mamers in the summer he made a speech expressing irreproachably patriotic sentiments to his constituents. He and his friends subsequently referred to this speech as evidence of his loyalty. Nevertheless, attacks upon him, more or less open, continued in the press by which he was charged with being in relation with the treasonable and *défaitiste* elements in France and abroad. In November M. Gustave Hervé, editor of the *Victoire*, having published these accusations against him in his journal, M. Caillaux gave out an explicit denial. M. Hervé, however, repeated his charges, definitely accusing him of complicity in the Bolo affair and the affair of the *Bonnet Rouge*, and association with treasonable movements in France and Italy. He concluded with a challenge to M. Caillaux to bring suit against him on the charges of defamation. Soon afterwards M. Caillaux summoned him before the Court of Assize at Mons, in the department which M. Caillaux represented in Parliament. Meanwhile, the examining magistrate in the cases of alleged intelligence with the enemy called as a witness M.

Caillaux who had paid the sum of 36,000 francs during the trial of his wife for murder to the *Bonnet Rouge* and was said to have been in close relations with M. Almeyreda down to the time of the latter's death. In an announcement that he gave subsequently to the press he declared that since the outbreak of the war he had contributed no funds to that paper and had had nothing to do with its policy.

On December 11 a demand was made for the trial of M. Caillaux on the following charges preferred by Gen. Dubail: Friendship with Bolo and Almereyda, in evidence of which letters were produced; relations with Signor Cavallini, now in prison in Italy on charges of disloyalty; plots while in Italy to bring about an alliance between France and Germany against Great Britain and to the detriment of the Entente Allies; complaints of his activities on the part of the diplomatic representatives of the Allies of France; in general evidence sufficient to justify the charge that since the beginning of the war he had attempted to hamper the military operations of the Entente Allies and promote the success of the enemy. One of the most important documents bearing on M. Caillaux's activities in Rome was given out at the close of the year 1917. It was a letter addressed on December 22, 1916, by the naval attaché at Rome to the chief of the general staff of the navy. He said that this letter written at the instance of the Ambassador declared that the following facts were known to the Ambassadors of Russia and Great Britain, to the Italian foreign minister, and to other authorities. On December 17, it declared, M. Caillaux made an appointment with the Italian cabinet minister, Signor Salandra. The latter avoided the interview but sent in his place Signor Martini, former minister for the colonies. M. Caillaux, in the course of his conversation with the Italian minister, referred slightingly to M. Briand, whose ministry he said was doomed. There would follow, in his opinion, a ministry under M. Clemenceau which would not last long for it would be a war ministry and France could not continue her military effort after the spring. By that time, he said, he himself would come to power and would sign the peace which would certainly astonish the entire world by the advantages which Germany would concede to Italy and to France. The whole cost of the war would be paid by Russia and the Balkans. What Germany wished was the road to Bagdad, an enlarged Bulgaria, and an enlarged Turkey. That would be no injury to France for the French field of action was in Africa. Serbia and Rumania would disappear, but that would be no more than they deserved. As soon as the peace was signed, he said, France would conclude a treaty with Germany, Italy, and Spain against England and Russia which were her real enemies. The writer then went on to say that the Italian foreign minister would have expelled M. Caillaux from Italy and seized his papers if he had not feared that this course would be displeasing to the government of France. He waited only a sign from the French government to do so. The writer further charged M. Caillaux with conferences with the most pacifist of the prelates at the Vatican whom he urged to redouble their efforts for peace, saying that if Italy concluded a separate peace France would be obliged to abandon the struggle; with promising that if he came to power he would renew diplomatic relations with the Holy See; also with having been in close relations with the editor of a pro-German newspaper in Naples.

A committee of eleven took up the question of suspending parliamentary immunity and on December 16 decided in favor of doing so. The removal of immunity was voted on December 22 by 392 to 2 (115 not voting). On the same day M. Caillaux made an address of two hours on his own behalf. The letters to Bolo and Almereyda were, he declared, entirely innocent. His sole fault had been in yielding to his impulses and making acquaintances, and he could be blamed at most for a certain carelessness in this respect. Why should he be blamed for trusting Bolo, when so respectable an authority as M. Monier had vouched for him? As to the charges against him, while in Italy, they were the result merely of a quarrel with M. Barrère, the French Ambassador there. The essentials of the policy which he had advocated were as follows: No alliance with Germany so long as the question of Alsace-Lorraine remained unsettled in the interest of France; but the possibility of an accord with Germany on determined and limited points. He declared that he had supported every government since the beginning of the war. As to the charges against him, he declared his hands were clean. Machinations against him had succeeded merely because he was too contemptuous to pay attention to them. He demanded that his parliamentary immunity should be suspended in order that he might prove his innocence. At the close of the year he was confined in prison awaiting trial before the high court.

THE CLEMENCEAU MINISTRY. There was at first some uncertainty as to a successor but the majority favored M. Clemenceau, whose vigorous attacks on the enemies of the national defense marked him out as the man most likely to proceed with energy in the matter of the scandals. M. Clemenceau succeeded in forming a ministry on November 16. For its personnel see above under *Government*. The most important matters, of course, pertained to internal policy which, in the opinion of M. Clemenceau and his supporters, had hitherto been too timid. The previous government was blamed for having treated labor as if it were peace time and for having been afraid to take any action toward offenders among the laboring classes. This tenderness towards evil-doers in the supposed interest of public peace was marked by the relations between M. Malvy and Almeyreda and by the open preaching of disloyalty in the *Bonnet Rouge* which paper was even partly supported at the expense of the state. The same policy permitted the Bolo and similar scandals to exist including those intrigues by which the *Journal* fell under foreign influences. The ministerial declaration of policy implied that a much more rigid course would be taken henceforth. M. Clemenceau said that too many crimes had been paid for on the front by an increase in the bloodshed. All accused persons, he said, should be tried before court-martial. There were to be no more pacifist campaigns, no more German intrigues, and neither treason nor half treason. The vote of confidence in the government was 418 against 65.

At the end of the year M. Clemenceau, in his attempt to promote efficiency in the administration of the war department, sent a circular letter to all the bureaus urging that business be dispatched effectively and quickly. He said the telephone or direct conversation should replace the roundabout system of sending documents for endorsement from one bureau to another when the persons concerned were near at hand. Correspondence should not be permitted to drag on in that manner when a conversation of two minutes would settle the point. After the conversation the memorandum should be made in writing but until a decision was reached there was no need of all this documentation. He said that he estimated that 80 per cent of the public business could be studied and settled rapidly and he therefore prescribed that in future all matters which did not require long investigation should be dealt within three days, including the time necessary for transmission.

See Labor; Prostitution.

FRAWLEY LAW. See Boxing.

FRENCH ACADEMY. See Academy, French.

FRENCH CONGO. Now French Equatorial Africa (q.v.).

FRENCH EQUATORIAL AFRICA (formerly French Congo). A French possession in equatorial Africa, bounded on the northwest by the Kamerun, on the north by Wadai, one of the central Sudan states, on the east by the Bahr-el-Ghazal, on the southeast by the Belgian Congo, and on the west by the Atlantic. It is under the control of a governor-general, assisted by a council of government. It was in 1906 divided into three colonies—the Gabun Colony, capital Libreville (pop., 3000); the Middle Congo Colony, capital, Brazzaville; and the Ubangi-Shari-Chad Colony, capital, Bangui. The Middle Congo Colony has an administrator-in-chief; the other colonies have a lieutenant-governor, and all three have administrative councils. The military forces number about 4000. The colony entails a heavy burden on the French colonial budget. A railway has been laid from Brazzaville to Bangui and one from Bangui to Fort Lamy. From the old area of 669,280 square miles must be deducted roughly 170,270 square miles ceded under the convention of November 14, 1911, to Germany by France; and to it must be added about 6450 square miles ceded to France by Germany from the Kamerun. The area ceded to Germany carries a population of about 1,000,000 out of the original 10,000,000 (the estimated population in 1906). The exports include ivory, ebony and other woods, rubber, and palm nuts and oil.

FRENCH ESTABLISHMENTS IN OCEANIA. A French colony in the south Pacific, consisting of widely scattered groups and single islands. Area (estimated), 3998 square kilometres; population, 31,477. Capital, Papeete (3617 inhabitants), in Tahiti. The principal exports are copra and vanilla.

FRENCH FOR SOLDIERS. See Philology, Modern.

FRENCH GUIANA (Cayenne). A French colony and penal settlement on the northern coast of South America. It covers 88,240 square kilometres (34,069 square miles) and had a population in 1911 of about 49,000. Cayenne, the chief town and only seaport, has about 13,500 inhabitants. Gold mining (placer) is the chief occupation of the people.

FRENCH GUINEA. A French West African colony. Capital, Konakry, with 6623 inhabitants; Kankan is the chief commercial centre. Other towns are Boké, Kindia, and Dubreka. The railway from Konakry to Kouroussa (588 kilometres) was completed and in operation January 1, 1911. A branch to Kankan was to have been completed in 1914. Transport from and into the interior is by caravan. Rubber is the principal export, and is gathered over all the colony; but the principal sources are the Futa-Jallon, the Farana region, and certain circles of Upper Guinea. Rice is grown, and grazing is widely practiced. The mineral resources are believed to be considerable. See French West Africa.

FRENCH INDIA. Five French dependencies in India, covering 513 square kilometres, with a population estimated (1915) at 266,828. The towns are Pondicherry (the capital), Karikal, Mahé, Chandernagor, and Yanaon. Chief exports, oil seeds, raw cotton, and pulse.

FRENCH INDO-CHINA. A dependency of France in southeastern Asia, made up of five states and a strip of territory leased from China, as follows: Annam, 159,890 sq. kilometres, with (1914) 5,200,000 inhabitants; Cambodia, 175,450 sq. kilometres, with 1,634,252; Cochin-China, 56,965 sq. kilometres, with 3,050,785; Laos, 290,000 sq. kilometres, with 640,877; Tongking, 119,750 sq. kilometres, with 6,119,720; Kwangchow-Wan (leased territory), 1000 sq. kilometres, with 168,000. Hanoï (in Tongking) is the capital, with 113,676 inhabitants; Cholon had 191,665; Bin-Dinh, 75,000; Saïgon, 72,000; Pnom-Penh, 54,621; Hué, 65,000; Vien-tiane and Haiphong, each about 27,000.

Trade statistics are returned for the colony as a whole, and are given by a British authority at £6,483,784 imports and £15,449,568 exports for 1915. The general budget balanced for 1917 at 42,399,800 piastres. Debt, January 1, 1915, 345,913,000 francs.

The railway from Saïgon to Mytho (the oldest railway in the country) is being extended to Cantho (60 miles). Other lines are the Haiphong-Laoki-Yunnanfu (291 miles), the line from Hanoï to the Chinese frontier (308), Tourane-Hué-Quang-tri and Tourane-Faïfu (130), Saïgon-Khat-Hoa-Langbian (183). The Yunnan Railway was completed in 1910.

FRENCH LANGUAGE MANUALS. See Philology, Modern.

FRENCH LITERATURE. When, after the first surprise of the war was over, after the victory of the Marne, men of letters took up their pens again, they expressed in a somewhat hasty manner their interpretation of the momentous world events—indignation at the treacherous attack, indignation at their own blindness because they allowed themselves to be deceived by Germany hypocrisy. The second year of the war, the market was flooded with the narratives of those at the front, soldiers of all ranks, and of people of all walks of life who had been dragged into the war directly or indirectly; also a great amount of lyric poetry reflected the courage and confidence of the French people. The third year—1917—while indeed diaries and poetry continued to form the bulk of the literary production, seemed to inaugurate an era of philosophical speculation, but of a calmer interpretation of events, and of interesting attempts to offer suggestions for the future.

Surely France does not refrain from acknowledging her mistakes in the past; not only do critics blame their government for its bureaucracy, for its neglect to make use of the splendid intelligence of their scholars for national prosperity, for the too conservative attitude of French financiers when it comes to investing the money of the French people; but also they reproach their writers of the past generation for their lack of substantial thought, for their sentimental socialism (Jaurès), for their fluid philosophy of intuition (Bergson), which together killed any attempt at really virile literature. See such vigorous books as J. Benda's *Sentiments de Critias* (arraignment of Bergsonism and Romain-Rollandism); R. Lote, *Les leçons intellectuelles de la guerre;* Sageret, *Guerre et Progrès;* Pawlowski, *Dans les rides du Front* (as delightfully witty as sharp); Ch. de Saint Cyr, *Ce qu'il faudra que soit la France de la Victoire* (answers from famous men). If one tries to define the chief constructive currents, two, so far, compel attention: One advocates with astonishing deliberation a return to something higher than mere national ambitions by way of the Catholic Church (the Pope being viewed not so much as he shows himself concretely to be in the person of Benedict XIII, but as ideally he ought to be if he were to represent the spiritual Catholicism of the world); see such books as Ch. Maurras, *Le pape, la guerre et la paix*, or, more mystical, H. Massis, *Le Sacrifice* (crowned by the Academy). The other current sees the future of France and of the world in a sound democratization of the nations. A little timid at the beginning, this current is growing bolder in expressing itself since America entered the war. (France did not believe that America would really enter the war.) See, besides Herriot's *Agir*, La Chapelle, *L'œuvre de demain*, and the neat, strong and concise Lysis, *Vers la Démocratie nouvelle*, and *Pour Renaître.* Two works of philosophical literature we must mention because of the fame of the authors, although they are distinctly outside the general trend of thought, are Loti's *Quelques aspects du Vertige mondial* (out of date metaphysical considerations) and Maeterlinck, *L'Hôte inconnu*, which "hôte" is the mystery in life, occultism, telepathy, etc. (the book was published in English translation in London, as early as 1914).

So, as usual, in times of social unrest, the line between philosophy and literature is pretty well obliterated. This does not, however, prevent the production of literature along conventional lines. Let us mention the best, following our ordinary classification.

Theatre. The greatest success of the year was Bernstein's *Elévation*—the theme (which, however, is already becoming alarmingly commonplace) is the man rescued from the depth of a low morality through the stern baptism of war, combined with the influence of a noble woman's love. Donnay's little play, *Le théâtre aux armées*, written for the soldiers and about soldiers, will not add much to the fame of the author. André Dumas wrote a delicate play, *L'Éternelle Présence*, for the Comédie Française which wanted to celebrate the anniversary of the battle of the Marne. Maurice de Croisset's *D'un jour à l'autre* is "marivaudage" around love and war episodes, while Porto Riche's *Marchand d'estampes* is a gruesome story of a sedate shop keeper in whom the war awakes romanesque fancies which lead to a double suicide. Farrère and Népoty wrote five acts on *La veille d'armes*. *Mon œuvre*, by Georges Berr and Verneiol, a satire against women, who, perhaps quite unconsciously, pursue all sorts of ends under the veil of *their* war work, was regarded as untimely. Porché's *Les Butors et la Finette*—a purely allegorical play of the war (*Les Butors*=the Huns and *la Finette*=France)—was the last remarkable play of the year. Some plays ignored the war altogether, and seemed anachronisms; especially Sacha Guitry's *L'illusionniste*, which touches us no more than a tale of the moon. Géraldy's *Noces d'argent*, at the Comédie Française, is of the same nature; it had the excuse, however, of having been written before the war. Marcel l'Herbier published a play in the new Paul Claudel style, *L'enfantement du mort* (mediæval mystery style). R. Morax offers some original marionnette plays in his *Théâtre de Poupées.* The "reprises" were interesting as indicating the public demand. Corneille's *Polyeucte* pleased very much; then the austere classical plays seemed to have a message, too: Euripides's *Andromaque* and Sophocles's *Œdipe Roi* (Paul Mounet taking the part of his deceased brother). Verhaeren's *Le Cloître* was another success. Less so were Balzac's *Vautrin;* and especially Bataille's *Amazone*, and Tr. Bernard's *La volonté de l'homme*—both plays showing how little "*volonté*" man has. A "Société Shakespeare" was founded, and Gémier gave a most interesting performance of *The Merchant of Venice.* B. Weiler's *Within the Law* had a fairly good run (Réjane). The interesting effort of Jacques Copeau in New York is treated under Drama.

Poetry. Fernand Gregh, one of the very best poets of France, offers *La Couronne douloureuse*, a collection of beautiful verses contrasting the quiet, meditative, artistic France of before the war, with the France mangled by the work of the brutal Huns. The powerful gift of satire, that we knew had been bestowed upon Félicien Champsaur, is made use of in a long poem the title of which betrays the inspiration: *L'Assassin Innombrable, Symphonie dramatique de haine contre Guillaume II . . . et Chant d'amour pour nos morts.* A place by itself must be granted to Max Leclerc, who produced one of the gems of war literature with his *La Passion de Notre Frère le Poilu*, a modern "*Conte dévôt*" full of exquisite pathos (Prix Revel awarded by French Academy), and also a collection of poems, *Souvenirs de tranchées d'un poilu.* Louis Mercier's *Prières de la Tranchée* are also of fine quality. Other collections of value are: G. Champenois, *Miracle de France*, L. Christophe, *Rose à la lance nouée*, Villodon, *Chants de guerre*, J. Bellouard, *Un chant de consolation* (the author is a priest; Barrès wrote an enthusiastic introduction), A. G. Garnier, *Gloire de la terre*, Magali Boisnard, *Le chant des femmes, poèmes de guerre et d'amour.* Delemère and Millet are two young poets who publish works of great promise in the little review *Vivre.* Among those who ignore the war, living even now all for their art, let us quote Milosz, *Poèmes* (Baudelarian), P. Valéry, *La jeune Parque* (he is the last Mallarmiste), Ch. de Saint Cyr, in *L'âme et le cœur*, continues his propaganda in favor of the renewal of poetry, or "*Intensisme*," and against such poets as Rostand, Romain, Gregh, etc. A. Cantacuzène, in his *Hypotyposes*, claims, without revolution, to just be allowed to write graceful poetry about anything that may prompt his inspiration. There should be mentioned under this heading a revival of the French *"Chanson"* since the war; see an article by Ernest Charles, in ***Opinion of***, February 10, 1917: ***"Le Caveau et les Théâtres des Chansons."***

Novel. The list is very long. Paul Acker (the author of *Soldat Bernard*) has a posthumous novel (*Entre Deux Rives*) in which he opposes the traditional ethics to the deceptive modern formula of living one's own life. Most novels have the war as a background. Bourget's *Lazarine* tells of the conversion to catholicism of a soldier after two rather complex love adventures. Marcel Berger's *Miracle du feu* is another story of moral regeneration through the war; so is G. Dérys' *L'occasion, l'herbe tendre;* Melle Harlor pictures the struggle between international dreams and concrete patriotism in *Liberté chérie;* Ch. de Rouves's *Française du Rhin* was crowned by the Academy; B. Vallotton's *On changerait plutôt la place du cœur* endeavors to show how the Alsatians were true to France at the bottom of their heart even if they did not realize it entirely before the war. Colette Yver, in *Mirabelle de Pampelune*, wrote the novel of a woman marrying a blind soldier; Foley, *Sylvette et son blessé*, is a charming war idyl; Léon Daudet is more realistic in his *Le cœur et l'absence*, as is D. D'Archimbaud in *Une vie intime;* and again very much in agreement with present preoccupations, are Fr. Boutet, *Celles qui les attendent*, and Jeanne Landre, *L'Ecole des Marraines* (one of many witty appreciations of the "marraine" institution). Well worthy of the fame of Antoine Redier (the author of the lofty *Méditations dans les Tranchées*) is his novel, *Pierrette*, a discussion among soldiers of the attitude of woman towards repopulation. M. Nadaud offers two remarkable "romans aériens," *Chignole* and *Les derniers Mousquetaires;* let us further mention Guiche, *Deux soldats;* Causse-Mael, *L'âme d'un canon*, and collections of short stories: Farrère, *Histoires de quatorze soldats*, and Pierre Mille's *En croupe de Bellone*, and *Sous leur dictée*—both names are guarantee for the quality of the books. The comic note is in the foreground in A. Billy, *La Malabéc* (a magic plant which revives intensely former sensations, and here the sensations of the delight of life before the intrusion of the war-lords is amusingly described), in A. Boissière, *L'extravagant Teddy de la Croix Rouge Anglaise*, and in P. de la Fouchardière, *Scipion Pégoulade* (a Tartarin of the war); Audigièr, *La Terre qui renait*, is a beautiful peasant novel. Novels which have nothing to do with the war and which must be mentioned are: E. Clermont, *Histoire d'Isabelle* (the author died in the war; he was specially known for his *Laure*); Rosny, *aîné*, *L'Enigme de Givreuse;* G. Vaucaire scored a decided success with his charming *La Demoiselle du Cinéma;* E. Dautrin's *L'Envolée* is the story of a woman who uses the lofty love a man has for her to start him in life, and then disappears; Pol Neveux evokes sweet memories of youth in the charming Champagne in his *Douce enfance de Thierry*. E. Estaunié gives three short stories (*Solitudes*) in his usual style. Miomandre publishes to-day a novel which he had completed before the war, in which he describes most humorously and wittily the man who always dreams of success even when he is summoned before court for bankruptcy; his book, *Veau d'or et vache enragée*, is a Chantecler in prose. Then we have exotic novels—as if there was no war going on—: Mirriam Harry, *Pagode d'amour*, J. d'Or Sinclair, *Noces de Jade;* Jérôme et Jean Tharaud in *L'Ombre de la Croix* describe a Jewish community in the Carpathian mountains. Gloomy realism we have also: Ch. Hirsch, *La grande Capricieuse* (two "blasés" haunted by death); Francis Carco, *Les Innocents* (nerve racking); M. Elder, *Vie apostolique de Vincent Vigeame* (a plebeian artist who is trying to understand himself).

War-Prose. Barbusse's *Le Feu* (which was awarded one of the Prix Goncourt) was by far the most widely read war book of the year, though in certain quarters it was criticized on the alleged ground that it belittled the soldier's heroism. Jean des Vignes Rouges's *Bourru, soldat du Vauquois*, while realistic enough, brought into relief the courage and intelligence of the soldier. G. Bonnet, *L'âme d'un soldat* is a fine analysis of a soldier who is an intellectual. Exhibiting a magnificent spirit of heroism are Diéterlen's *Le Bois Le Prêtre*, and Le Bail's *La brigade des Jean Legouin;* H. Bordeaux has a sequence to his *Derniers Jours du Fort de Vaux*, in *Captifs Délivrés*. All the following are remarkable books: E. Lintier's (the author of the famous *Ma pièce*) posthumous *Avec une batterie de 75, le tube 1233;* Marcel Dupont, *En Campagne;* Lieut. E. R. (Capt.) Truffeau, *Carnet d'un Combattant;* Capt. Langevin, *Les Cavaliers de France;* Guy Vernazobus, *Journal d'un officier de cavalerie;* Capt. Belmont, *Lettres d'un officier de Chasseurs Alpins;* P. Duval-Arnould, *Crapouillots* (the little mortars which throw torpedoes; very interesting); Pierre de Kadora, *Mon groupe d'auto-canons;* G. Lafond, *Ma mitrailleuse;* M. Genevoix, *Nuits de guerre;* A. Erlande, *En campagne avec la Légion Etrangère* (widely read); R. Milan, *Vagabonds de la gloire* (2d series); J. Valmy-Baisse, *Les Pépères de la Victoire;* Jacques Pirenne, *Les vainqueurs de l'Yser* (the Belgian army); Maurice Dekobra; *Messieurs les Tommies* (the Tommies as seen by a Frenchman); E. Zavie, *Prisonniers en Allemagne;* Ginisty and Gagneur, *Histoire de la guerre par les combattants*. The publisher Lemerre issued a collection *Les As* (Aces, the pick of the aviators) *peints par eux-mêmes*. These are books by physicians: L. Chauveau, *Derrière la bataille;* G. Duhamel, *Vie des Martyrs;* Dr. P. Fiollet (now killed), *La Marsouille* (nickname given to those ambulancers who pick up the wounded on the field of battle); M. Donnay, *Lettres à une Dame Blanche* (lady of the Red Cross). A charming little tale of a young officer on leave is Paul Géraldy's *La Guerre, Madame. . . .* Perhaps the best Diary of the war, for Paris and France, is found in Blanche's *Cahiers d'un artiste* (the 3d vol. of which is now out); Paul Patté's *Le cran*, and G. Alphaud's *France pendant la guerre* are excellent, too; and so are the two following books by women: Isabelle Rimbaud (the sister of the poet), *Dans les Remous de la bataille*, Marguerite Yerta, *Les six femmes et l'invasion*, the latter without any literary pretense. Finally the following deal with War and Religion: M. Barrès, *Les familles spirituelles de la France* (one of the stirring books since the war began); E. Bauman, *L'abbé Chevoleau, caporal au 90°*

d'infanterie; Roger Allier, In Memoriam (letters published by his family); Jean Guiraud, *Clergé et Congrégations au service de la France* (this is propaganda). The Prix Goncourt went to H. Malherbe's *La flamme au poing;* competitors were Giraudoux's *Lectures pour une ombre,* and A. Fribourg's *Croire*—all three war books.

HISTORY OF LITERATURE AND CRITICISM. Here, owing to the war, the output continued to be poor. Paul Gaultier recalls *Edgar Quinet, un Prophète;* G. Mossé adds another study to the many Vigny studies since the war, *Le Pessimisme de Vigny;* Ripert writes on *La versification de Mistral;* P. Desanges on *O. Mirbeau.* W. H. Scheiffley publishes in New York *Brieux and Contemporary French Society,* and Albert Schinz writes an abundantly documented article on "The Renewal of French Thought before the Great War" (*Journal of American Psychology,* June. 1916). Georges Docquois, in *Nos émotions pendant la guerre,* studies the reaction of well known men of letters to the war. Humorist with his pen as well as with his crayon, Sem publishes an album, *Un Pékin sur le Front;* and Poulbot has made a pathetic book of the same order: *Des Gosses et des Bonshommes.* The Cinquantenaire of Baudelaire's death has been widely commemorated by editions and articles. The Centenary of Mme. de Staël's death was commemorated in Geneva. Some have also reminded us that Lamartine's *Le Lac* was written in 1817. We have to record the death of Marquis de Vogüé, of Paul Meyer, and Adrien Bertrand. The French Academy has had its first "Reception" since the war. Alfred Capus was the hero of the day. The next to be elected will be Marshal Joffre—who never wrote anything . . . except a great page of history called "The Battle of the Marne."

FRENCH SOMALI COAST. A French protectorate on the gulf of Aden. Official report gives area 120,000 square kilometres, and population 213,000. Jibuti, the capital, has about 17,000 inhabitants. Imports (1915), 24,106,230 francs (21,024,712 francs in 1910); exports, 40,996,039 (33,566,887).

FRENCH WEST AFRICA. A French African possession composed of the following colonies and territories, with estimated area and 1915 (estimated) population as follows:

	Sq. km.	*Pop.*
Senegal	191,600	1,247,979
French Guinea	239,000	1,812,579
Ivory Coast	325,200	1,417,029
Dahomey	107,000	911,749
Upper Senegal and Niger	782,700	5,598,978
Mil. Ter. of the Niger	1,383,700	850,094
Mauritania	893,700	600,164
Total	* 3,922,900	12,438,567

* 1,514,682 square miles.

The administration of the French possessions in northwest Africa (inclusive of the French Congo), which was in process of reorganization from 1895, was completed and consolidated by a decree of October 18, 1904. The territories of Senegambia and the Niger were converted into a separate colony under the name of Upper Senegal-Niger, and a commissioner attached to the general government was appointed for the administration of the civil territory of Mauritania. Later, the Niger territory was separated from Upper Senegal and Niger colony and became an administrative subdivision known as the Military Territory of the Niger, under a commandant. In 1916 Tibesti, a region recently occupied by the French, was made a part of the military territory. A general budget was created, to be settled by the governor-general in council, to which are devoted the funds derived from the customs and navigation duties of all the constituent colonies, and which provides for all expenses which interest all the colonies generally. The several colonies, therefore, can only reckon on the funds arising from their internal resources, such as the capitation tax, trading licenses, etc., but they are at the same time relieved of many expenses which have been transferred to the general budget. Provision is also made in the general budget for subventions to those of the colonies requiring financial help. Senegal is the oldest and most important of the French possessions in West Africa. It is situated to the north of the British colony of the Gambia; its capital is St. Louis. French Guinea includes the settlements of Rivière du Sud (capital Konakry) and Futa Jallon, and extends up the whole of the northwest coast (save where intercepted by Portuguese Guinea and the British colony of the Gambia) to join the colony of Senegal. Between the British colony of the Gold Coast and the republic of Liberia is the French Ivory Coast (capital Bingerville), including the settlements of Grand Bassam and Assinie and the Kroo country with the hinterland. To the south is Dahomey, between the British colony of Lagos and German Togoland. It consists of about ninety-five miles of the Benin coast, where are the settlements of Kotonou and Grand Popo with the hinterland. The ancient capital of the colony is Abomey, which has now been transferred to Porto Novo. The chief port is Kotonou. Bamaho is the capital of the Upper Senegal and Niger colony. The governor-general for French West Africa (M. van Vollenhoven, appointed May 10, 1917) resides at Dakar.

A British authority gives in pounds sterling the following trade figures for 1914 and 1915:

	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
Senegal	3,202,746	2,850,569	3,217,895	3,231,792
Upper Senegal and Niger	223,715	187,427	95,785	67,995
French Guinea	369,527	387,572	456,121	650,619
Ivory Coast	455,427	286,470	342,601	287,160
Dahomey	475,219	425,250	518,114	526,571
Mil. Ter. of the Niger	40,024	54,116	24,384	64,813
Total	4,766,658	4,191.404	4,654,900	4,828,950

The products and exports are peanuts, rubber, palm kernels, palm oil, gum arabic, live animals, etc. In 1915, 1844 vessels of 3,348,248 tons entered the ports of French West Africa.

For 1917 the general budget for the colonies balanced at 24,172,000 francs.

FRIEDHEIM, ARTUR. See MUSIC, *Artists,* Instrumentalists.

FRIEDRICH, JOHANNES. A German theologian and ecclesiastical historian, leader of the Old Catholics, died August 11, 1917, at Munich. He was born at Poxdorf in 1836, was educated at Bamberg and Munich universities, became a Catholic priest in 1859, and in 1865 was appointed professor of theology in the University of Munich, and in 1867 a member of the Academy of Sciences. He was a pupil of Döllinger and in 1869 was a delegate to the Vatican Council at Rome. Here Friedrich strongly supported Döllinger in the latter's opposition to the dogma of papal infallibility. As a result he was excommunicated in 1871, and eleven years later he was transferred from the chair of theology to that of history. This was due to Ultramontane influence. In 1874 Friedrich opened the Old Catholic theological faculty at the University of Bern and lectured there for a year. His most notable work is the *Kirchengeschichte Deutschlands* (1867-69); but his *Tagebuch während des Vatikanischen Konzils geführt* (1871) and *Documenta ad Illustrandum Concilium Vaticanum* (1871) are important sources of information concerning proceedings of the Vatican Council. His other publications include: *Der Mechanismus der vatikanischen Religion* (1876); *Geschichte des Vatikanischen Konzils* (1877-87); *Beiträge zur Geschichte des Jesuitenordens* (1881); *Johann Adam Möller, der Symboliker* (1894); *Jacob Frohschammer* (1896); and *I. von Döllinger* (1899-1901).

FRIENDS, Religious Society of. There are four branches of this denomination: The Orthodox, Liberal (Hicksite), Wilburite, and Primitive. The Orthodox body is the most numerous and in 1917 had about 100,000 members, 1315 ministers, and 775 meeting-houses. The Hicksite branch had about 20,000 members and 211 meeting-houses; the Wilburites about 3900 members, 47 ministers, and 48 meeting-houses; the Primitive, about 171 members, 10 ministers, and 8 meeting-houses. The Five Years' Meeting is the central organization of the Orthodox body. It includes 13 yearly meetings. The Friends' General Conference includes the seven yearly meetings of the Hicksite body. Both have shown considerable activity in recent years. Summer schools are held and Woolman House, a Friends' School for Social and Religious Education, was established at Swarthmore, Pa., in 1915. All branches of Friends unite in the propaganda of their peace principles. During the war American and English Friends have combined most effectively in furthering the work of the Red Cross. After the battle of the Marne the English Friends began to aid in rebuilding and rehabilitating northern France. In this work American Friends of all branches have also engaged; and since the entry of the United States into the war American Friends have pledged themselves to a great programme of reconstruction, in coöperation with English Friends and the American Red Cross. The work of all the Friends is now merged into an organic part of the American Red Cross, with the title "Bureau of Friends' Unit of the Department of Civil Affairs of the Red Cross." At the close of 1917 practically all the civilian relief work of the Red Cross was in the hands of the Friends, and plans had been made for greatly increasing the scope of the work. At first the French government assisted the Friends until the American Red Cross entered the field; but now the Red Cross has undertaken to bear the expense of machines, houses, furniture, etc., in the work of reconstruction, the Friends pledging themselves entirely to maintain their own workers. Financed entirely by the Friends themselves, relief work similar to that in northern France is done among Belgian refugees in Holland, Serbian refugees in Corsica, and in the province of Samara in Russia. See Red Cross, American National.

FRISSELL, Hollis Burke. Dr. Frissell, a well known educator, died on August 5, 1917, at the age of sixty-six. He had been the principal of the Hampton Institute for almost a quarter of a century before his death and was its chaplain for about fifteen years before that. His life was one of self-sacrifice and devotion to others. Under his personal direction Hampton Institute became a centre of industrial and agricultural enlightenment. It trained Indians and negroes for the farms and for the trades.

FROSTS. See Horticulture.

FRUIT. See Horticulture.

FUEL. See Chemistry, Industrial.

FUNGOUS DISEASES. See Botany, *Plant Diseases.*

FUNSTON, Frederick. An American soldier, died February 19, 1917, at San Antonio, Tex. He was born at New Carlisle, Ohio, November 9, 1865, but while he was a boy his family moved farther west and in 1881 settled on a Kansas farm. After two and a half years at the University of Kansas, he went to work in 1888, first as a train conductor and then as a reporter in Kansas City. Love of adventure attracted him to the investigating work of the Department of Agriculture. As agent of the department, he accompanied the Death Valley expedition, and later made dangerous journeys in Alaska. Next he made his way into Mexico, where he gained a knowledge of Spanish and made himself a master in the handling of machine guns. This combination of abilities proved irresistible when he offered his services to General Gomez of the Cuban insurgents in 1896. He participated in twenty-two battles and made himself invaluable to both Gomez and Garcia.

Promoted to lieutenant colonel, he received a leave of absence and was at home when the Spanish-American war broke out. He was at once commissioned colonel of the 20th Kansas Volunteers and was sent to the Philippines. There, while serving in the northern Luzon campaign under Gen. Arthur MacArthur, he performed the exploit that earned him promotion to brigadier general of volunteers and the congressional medal of honor. On April 26, 1899, he crossed the Rio Grande at Calumpit on a small bamboo raft under heavy fire and established a rope ferry that won the battle for the American forces. But the feat for which he became most famous was the capture of Aguinaldo, the rebel chieftain, on March 23, 1901. This Funston accomplished without loss of blood and by a ruse, at the end of a dangerous march with only ten Kansas volunteers as support. He was then in command of the Fourth District of northern Luzon. At this time he was promoted to brigadier general, U. S. A.

After his return to the United States in the same year, Gen. Funston was in command successively of the Departments of the Colorado, the Columbia, the Lakes, the Southwestern Division, and California, and of the Army Service Schools. Then he was sent abroad again, and in 1911-13 was commander of the Department of Luzon, and thereafter for some months of the Department of Hawaii. In January, 1914, he became commander of the Second Division of the United States army, and in the following April commanded the Vera Cruz expedition.

His services as military governor of that city brought him the rank of major general. Since February, 1915, he had been in command of the Department of the South, and since 1916 had had control of the entire military force on the border, with headquarters at Fort Sam Houston. He directed the punitive expedition into Mexico, headed by Gen. Pershing, and is said to have had an almost unparalleled amount of executive work to handle. His death was due to heart disease.

The San Francisco earthquake and fire came while Funston was stationed there in 1906. At this time, when the city called for Federal aid, his energy and executive ability in organizing relief for the inhabitants and in maintaining order won high praise. His most famous measure was the destruction of all liquor in the city. Because of his height, which was only five feet, four inches, he was popularly known among soldiers as "the Bantam of the Army" and "the Little Man of War," and he was much liked for his soldierly qualities combined with a democratic dislike of military show. His body lay in state in the Alamo at San Antonio, and in the San Francisco city hall, and was interred in the national cemetery at the Presidio. Gen. Funston's home was at Iola, Kans.

FUR-BEARING ANIMALS. See ALASKA.

FURST, WILLIAM. William Furst, a leading composer of incidental music for theatrical productions and a noted orchestra leader, for years associated with David Belasco, for whose plays he wrote accompanying selections, died on July 11, 1917, at the age of sixty-five. For more than thirty years he had been known as a most versatile composer of theatrical music, and among the stars for whose productions he wrote were Sir Herbert Tree, Maude Adams, Otis Skinner, William Faversham, Viola Allen, Henrietta Crosman, and Mrs. Leslie Carter. The latest music he wrote was for Miss Geraldine Farrar's appearance in "Joan the Woman." He wrote the music of "The Isle of Champagne" and composed light operas for Lillian Russell, Dela Fox, Jefferson De Angelis, and other stars.

Among his notable compositions of incidental music are: *The Heart of Maryland; Under Two Flags; Du Barry; Zaza; Madam Butterfly; The Darling of the Gods; The Music Master; The Rose of the Rancho; The Girl of the Golden West; The Return of Peter Grimm; The Concert;* and *Marie-Odile.*

GALICIA. A crownland and titular kingdom of Austria. It is bounded on the north by Russian Poland, on the northeast by the Russian government of Volhynia, on the east by the Russian government of Podolia; at the southeast it touches Bessarabia, and on the south the Bukowina and Hungary, being separated from the latter by the Carpathian Mountains. Galicia formed a part of Poland from the fourteenth century till 1772, the year of the first Polish partition. It is the largest of the Austrian crownlands, having an area of 30,308 square miles, or about 26.2 per cent of the empire. The population according to the census of December 31, 1910, was 8,025,675 (about 28.1 per cent of the Austrian total), as compared with 7,315,939 in 1900: as estimated in 1913, 8,211,770. The number of Austrian subjects in Galicia in 1910 was 7,980,477; of these, Polish was the vernacular of 4,672,500 (58.55 per cent); Ruthenian, 3,208,092 (38.38 per cent); German, 90,114 (1.13 per cent); Bohemian, Moravian, or Slovak, 8718 (0.11 per cent). About 93 per cent of the Austrian Poles and about 91 per cent of the Austrian Ruthenians are inhabitants of Galicia; of the remaining Ruthenians, over 8 per cent (305,101) were in the Bukowina at the 1910 census. Of the Galician population in 1910, Catholics (including those of the Roman, Greek, and Armenian rites) numbered 7,112,574 (88.61 per cent); Evangelicals, 37,144 (0.46 per cent); Orthodox, 2845 (0.05 per cent); Jews, 871,895 (10.86 per cent). In 1910 the percentage of persons over 10 years of age who could neither read nor write was 40.6, being 36.3 for males and 44.6 for females; for all Austria the percentage was 16.5, or 14.7 for males and 18.3 for females. Of the inhabitants in 1910, about 73 per cent were dependant on agriculture. The capital of Galicia is Lemberg, the seat of one of the eight Austrian universities and of one of the seven technical high schools. Urban population as returned by 1910 census (estimates of June 30, 1914, in parentheses): Lemberg, 206,113 (212,000); Cracow; 154,141 (171,000); Przemysl, 54,078 (57,000); Kolomea, 42,676 (45,700); Tarnów, 36,731 (38,700); Drohobyez, 34,655 (40,000); Tarnopol, 33,871 (35,200); Stanislau, 33,328 (34,400); Stryj, 30,895 (34,400); Neusandez, 25,004; Jaroslau, 23,965. Galicia has a unicameral diet of 161 members and is represented in the Austrian Reichsrat by 106 members. See AUSTRIA-HUNGARY and WAR OF THE NATIONS.

GALLAUDET, EDWARD MINER. An American educator of the deaf and dumb and an authority on international law, died on September 26, 1917. He was born in Hartford, Conn., in 1837, and was graduated from Trinity College in 1856 and became a teacher in the institution for the deaf and dumb which his father had founded in Hartford. In 1857 he moved to Washington, where in conjunction with others he established an institution similar to that at Hartford, known as the Columbia Institution for the Deaf and Dumb. He became president of its two distinct departments, the Kendall School and the National Deaf Mute College, which in 1893 were named, in honor of his father, Gallaudet College. In 1867-68 he made an extended trip to Europe, visiting the principal institutions for the deaf and dumb and publishing on his return a full and extremely valuable report. In 1880 he was a delegate to the international congress of instructors of deaf mutes, held in Milan, Italy, and in 1883 was the president of the convention of American instructors of deaf mutes held at Jacksonville, Ill. In 1886 he gave information on American methods of teaching the deaf, dumb, and blind before a royal commission appointed to investigate and reorganize the system in England. His distinguished work won him honorary degrees from Trinity, Yale, and Columbian (now George Washington) University. His work as an educator of the deaf won him the honor of being a Chevalier of the Legion of Honor. His publications include *A Popular Manual of International Law* and *Life of Thomas Hopkins Gallaudet*, his father.

GAMBIA. A British West African colony (formerly part of the West African Settlements, made a separate colony in 1888) on the river Gambia (area 69 square miles), with a protectorate extending on both banks of the river for 250 miles from its mouth (about 4000 square miles). Capital, Bathurst, on St. Mary's Island. The cultivation of peanuts is the principal industry. Imports, 1915, £521,151 (1910, £578,983). Imports of cotton goods in 1915, £63,307 (£130,611 in 1910); kola nuts, £60,262 (£65,534); rice, £27,115 (£46,087); sugar, £2857 (£9708); spirits, £4104 (£7129); specie, £218,656 (£208,544), etc. About 49 per cent of the imports come from England. Exports 1915, £595,797 (1910, £535,447). Exports of peanuts (mostly to France) in 1915, £400,435 (in 1910, £387,943); hides, £11,911 (£11,310); palm kernels, £5457 (£5640); specie, £165,177 (£112,104), etc. Revenue, 1915, £92,253 (1910, £82,880); expenditure, £89,028 (£63,301).

GANZ, Albert F. Professor of Electrical Engineering at Stevens Institute of Technology and a widely known consulting engineer, died on July 28, 1917. He was born in Elberfeld, Germany, on April 25, 1872, but came to this country in 1881. He was graduated from Stevens in 1895 and was appointed instructor in applied electricity immediately after his graduation. In 1902 he was appointed professor of electrical engineering and head of the electrical department. He contributed many scientific papers to technical societies and journals. He was a member of the American Society of Mechanical Engineers, the American Electrochemical Society, the Society for the Promotion of Engineering Education, the Illuminating Engineering Society, and the American Gas Institute, and a fellow of the American Institute of Electrical Engineers, and the American Association for the Advancement of Science.

GARBAGE AND REFUSE DISPOSAL. The war was decreasing the volume of garbage and other classes of municipal refuse and reducing the volume of recoverable commercial wastes which they contain. At the same time it was increasing the practice of utilizing these materials to the utmost. The war reaction as a whole bid fair to cause lasting changes in these, as in many other, fields. Besides reducing sheer wastefulness and stimulating the utilization of such materials as unavoidably find their way to the garbage, ash, and refuse cans, war stress was hastening the understanding of the fact that the disposal of this whole class of waste is a matter of municipal cleansing rather than of public health, and that the problems involved lie in the fields of engineering and economics, instead of preventive medicines. This does not mean that waste disposal should not be conducted in a sanitary way. Rather it indicates that its direction should be in the hands of the department of engineering and public works, and not in the health department. As the war drove this fact home, through giving courage to break away from old traditions in a time of emergency, garbage and refuse disposal would be put on a sounder basis. The practical effects of this, as already shown in 1917, were to increase the feeding of garbage to hogs, to stimulate the building of garbage-reduction plants where time and funds permitted and pig-feeding was or seemed to be impracticable, and to lessen the construction of incinerating plants for garbage disposal while adding to the number used to burn the tailings from refuse sorting and utilization plants.

A further effect would be to force the separation of garbage from ashes at the house door. In many cases a third separation would be caused. With three waste cans, garbage will be kept free from all other waste and can thus the more readily be fed to hogs or treated in reduction plants; paper, twine, bottles, tin cans, rubber, and leather, can readily be separated on sorting belts at a central plant, packed and sold, while the combustible tailings go to a furnace which produces steam for operating the sorting works; and ashes, free from the organic matter which constitutes garbage and from miscellaneous refuse which has saleable value, and if not recovered causes unsightly litter, may be disposed of for filling or otherwise in the most convenient location, after a short and inexpensive haul.

In smaller cities or under special conditions ashes and rubbish may be mixed and dumped together. In some localities, where local conditions are favorable or money very short, garbage, rubbish, and ashes may be hauled to a dump, due care being taken to keep clean ashes at the top. In extreme cases, garbage alone may be removed by the city. The preceding discussion does not mean that existing garbage and refuse incineration plants should be shut down or that new ones should not be built. The question should be decided in each case according to local conditions, as interpreted by a competent refuse disposal engineer. Such a person may advise incineration of mixed refuse, either in high temperature destructors, with steam utilization, or in a furnace of lower temperature and cost, with no attempt to utilize steam.

Garbage Utilization Division, United States Food Administration. Eloquent testimony to the importance of garbage disposal in its relation to food conservation and the war was afforded by the fact that in the latter part of 1917 the United States Food Administration created a division of garbage utilization. For chief of this division, Mr. Hoover selected I. S. Osborn, an engineer with large experience in garbage disposal. In a paper read before the American Public Health Association in October, Mr. Osborn stated that returns to the United States Food Administration showed that for the first nine months of the year there was an average decrease of from 12 to 15 per cent in the garbage collection of sixty cities of the country. Some cities showed an increase over previous years. Some of the decrease was attributed to less thorough public collection and some to more extensive private collection for pig feeding and for reduction. From the garbage treated in reduction plants, the yield of grease was 15 per cent less per ton than in the previous year. This decrease would probably have been still greater had it not been for the fact that butchers were not trimming their meat sold to customers as closely as before. Evidence of this is found in the decreased quantity of scrap collected from butchers by rendering companies.

Mr. Osborn stated that garbage piggeries would be found desirable in many cities. Each thousand population produces food waste, he said, sufficient to fit twenty-five hogs for market. At the current price, a ton of garbage would produce from $7 to $8 worth of pork. For larger cities, Mr. Osborn suggested that garbage reduction would prove to be the most advantageous method. At October, 1917, prices, the existing garbage reduction plants were recovering grease to the value of about $8,500,000, and tankage for fertilizer base to the value of $2,250,000 a year. The grease is utilized in various ways, the most valuable grease content being glycerine. The garbage grease produced each year in reduction plants in operation in the United States was sufficient to make 8,000,000 lbs. of nitroglycerine and still leave sufficient grease to make about 200,000,000 twelve-ounce cakes of soap. Mr. Osborn pointed out that the shortage of fats and fertilizer would continue for many years after the war, thus giving encouragement for the installation of garbage reduction plants. Before the creation of the garbage utilization division of the United States Food Administration, the United States Department of Agriculture had begun an investigation of feeding garbage to hogs. The study was put in charge of a sanitary engineer and of a veterinarian. It was expected that a report on the subject would be issued in 1918 and that Mr. Osborn would also issue a report.

Garbage Piggeries Conference. On October 7, Mr. Osborn held a conference at Chicago on municipal garbage piggeries. About twenty-five sanitary engineers, health officers, superintendents of piggeries, both municipal and private, meat packers, and officials of the Bureau of Animal Husbandry, United States Department of Agriculture, were present. One of the objects of the conference was to obtain a consensus of opinion as to pig feeding methods and results and particularly as to the precaution which should be taken in the way of general sanitation and the protection of the hogs against disease, especially hog cholera. It was brought out that all garbage feeders agree that it is not advisable to cook garbage to be fed to hogs, except in the case of hotel waste, rich in recoverable fats. From the discussion at this conference and from other sources, it was evident that municipal garbage piggeries might be conducted in a sanitary way and that the hogs might be protected against cholera and other communicable diseases if well-known preventive measures were used. For an account of the experience of Worcester, Mass., with its garbage disposal piggery see article by F. H. Bonnet, Jr., in *Engineering-News Record*, of August 30, 1917.

Garbage and Refuse Disposal at Army Cantonments. Revenues reaching many hundred thousand dollars a year were being obtained by the United States War Department from the garbage and other wastes at the army cantonments and other army camps. The work was started in the latter part of 1917 on a somewhat tentative basis so far as contract prices are concerned. The garbage and a number of other different classes of refuse were put each in a separate can and were collected and removed to a transfer station. The contractor took the refuse to a point at least three miles from the camp. The garbage at some of the camps was fed to hogs, while from some it was taken to reduction plants. The contractors also removed and paid for manure from the large number of horses and mules at the camps.

The Largest Garbage-Reduction Plant in the World. During the year a new garbage-reduction plant for the disposal of the garbage of the larger part of New York City was put in operation on Staten Island (Borough of Richmond). The plant had a contract capacity of 2000 tons a day. It was built by the Metropolitan By-Products Co. under a contract which provided that the company shall receive all of the garbage of New York, except a part of Queens Borough and Staten Island, for a period of five years and pay the city a total of $900,000 for the garbage. The city had the right to buy the plant at the expiration of the contract. The city delivers the garbage to various waterfront loading stations, where it is dumped into barges which convey the garbage to the reduction works. At the unloading wharf a two-yard clamshell bucket lifts the garbage from the barges to a large receiving hopper on shore, which is located over a picking or sorting conveyor. Men stationed on both sides of this conveyor pick out glass, crockery, and other foreign matter that might clog the machinery. Tin is recovered from tin cans by means of a bath of chlorine gas. The gas is condensed and thus made available for use in dyeing silk. The cans are melted and cast into sash weights. From the sorting conveyor the green garbage is delivered by a system of conveyors, eight in number, to one or another of 199 garbage reducers. These reducers are located in the building covering an area of 160 x 337 ft. The reducers are grouped in units of twenty-four each, every unit being completed in itself and operated by a separate crew of men. In these reducers the garbage is treated by the Cobwell system. The reducers are cylindrical steel shells in which are stirring paddles mounted on a central revolving spindle, driven by electric motors. Each reducer holds about five tons of green garbage. When the reducer is filled and sealed a solvent (kerosene) is introduced and steam at 100 lb. pressure is turned into the steam jacket which surrounds the digester tank, and the agitators or stirrers are started. The valves to the vapor line are opened. The vapors driven off, consisting of a mixture of solvent and water, are carried to a condenser where the solvent is separated from the water and returned for further use. The water is wasted. The cooking process is continued until the garbage is completely dehydrated, and the vapor goes to the condenser free of solvent. This requires about seven hours. The liquid in the tank, consisting of solvent and grease, is then drawn off to a still from which the solvent is recovered for further use. The reducer is then filled with solvent for a second and a third time in order to complete the extraction of the grease. The grease is barreled and sold for use in the manufacture of glycerine, soap, candles, etc. After the grease and water have been removed, the tankage is discharged from the bottom of the tank in the form of a brown, dry powdery material which has an odor resembling fresh roasted coffee. Conveyors lift the tankage some 50 ft., where it is discharged into a large revolving screen where the coarse material is taken out. The tankage then passes over a second screen and is discharged onto a belt conveyor provided with a magnet for the removal of particles of iron, such as knives and forks. The tankage then goes to a drying pan, then to a third series of screens, and finally to a shipping house. The reduction plant is run in three eight-hour shifts, and in the latter part of 1917 was reported as treating 1500 tons of garbage a day.

During 1917, Rochester, N. Y., was added to the list of cities owning and operating a garbage-reduction plant—most of these plants being privately owned. Rochester bought out a private plant which had been in operation some years. Other municipally owned plants are located at Chicago, Cleveland, Columbus, Ohio, Schenectady, N. Y., and Akron, Ohio. The last named plant was turned over by the city to a company for private operation during the year.

New Incinerator at Toronto, Ont. As a part of a programme decided upon before the war, Toronto, Ont., put in operation in 1917 a 180-ton contract capacity refuse destructor of the Sterling type. The fall programme provided for two other destructors and for the continuance in operation of an old incinerator. Official contract tests of the new incinerator showed a capacity to burn 400 tons in 24 hr., instead of the contract capacity of 180 tons.

Garbage Franchise Granted by St. Joseph, Mo. It was common practice for some of the smaller cities of the United States to let contracts for garbage collection and disposal, while many of the smaller cities leave their inhabitants to the mercies of private collectors. In 1917, St. Joseph, Mo., did the unusual thing of granting a franchise for both collection and disposal of garbage, rubbish, ashes, and manure. For removing wet garbage the grantee was authorized to charge householders 60 cents a month for the first year, 50 the second, and 40 the third and fourth, but the fifth year removal was to be free. For removing other wastes the charge was $1 a cubic yard. The city had the option of ordering universal free service at the end of five years, by paying the contractor $1250 a month. The garbage was to be fed to hogs.

GARDENING. See Horticulture.

GARFIELD, Harry Augustus. National Fuel Administrator. Dr. Harry Augustus Garfield is the son of James Garfield, former president of the United States, and was born at Hiram, Ohio, in 1863, and was graduated from Williams College in 1885. He taught Latin and Roman History at St. Paul's School, Concord, N. H., the next year, and in 1888 started to practice law in Cleveland, Ohio, in a firm of which his brother was a member. During his fifteen years as a lawyer he rose to a leading position in the public life of Cleveland. He was president of the Chamber of Commerce in 1898 and 1899, was an organizer of the Municipal Association, and served as vice-president of a savings bank and director in several other financial and commercial corporations.

From 1891 to 1897 he was the professor of contracts in the law school of Western Reserve University, and in 1903, Princeton, then under the presidency of Woodrow Wilson, called him into service as the professor of politics. He served in this post for five years, becoming a close friend of Grover Cleveland and Woodrow Wilson. In 1908 he was elected president of his Alma Mater, Williams, to succeed the Rev. Dr. Henry Hopkins, and is still serving in that capacity in addition to his work for the government. He was named as Federal Fuel Administrator on August 23, 1917, at which time he was just completing his work as chairman of the committee to fix the price of wheat until next year.

He is a member of the American Historical Association, the American Economy Association, the American Political Science Association, the American Society of International Law, the American Bar Association, the National Municipal League, and the National Institute of Social Science.

GAS, Fuel, and Illuminating. Throughout the United States during 1917, there was a continued tendency on the part of Public Service Commissions to recognize the fact that a heat rather than a luminiferous standard for gas was desirable. This was particularly true, since there was a demand in the manufacture of explosives for toluol and other products, which were related in some way or other to the various materials used to enrich the gas, and produce a brighter flame. In October, the Public Service Commission of New York gave such permission, but a few weeks later, a similar body in New Jersey refused it, claiming that there were other ways of enriching illuminating gas than by the use of materials needed for explosives. The use of gas of lower luminosity meant that the use of incandescent gas mantles must become even more general, and that they would take the place of the open burner for practically all purposes of illumination.

During the year 1917, as a result of the war, there was a vast increase in the industrial utilization of coal gas as an industrial fuel in Great Britain. The British Commercial Gas Association published a summary of this work in the second series of *Industrial Efficiency Numbers*, which gave statistics of the percentage increase since the outbreak of the war in the consumption of gas for manufacturing and power purposes, in not a few instances, 500 per cent and over increase being recorded. Gas was also being used for motor vehicles. See Automobiles.

GAS, Natural. The value of natural gas commercially used in 1916, was greater than in any other year in the history of the industry. The amount of 753,170,253,000 cubic feet exeeded by nearly 125,000,000,000 the former record established in 1915. West Virginia produced the greatest quantity and is followed by Oklahoma, Pennsylvania, California, Louisiana, Minnesota, Texas, and Arkansas. The great increase in the production of natural gas is due, chiefly, to the enormous expansion of the gasoline industry in all the natural gas producing States, and to a greatly increased demand for natural gas fuel by industries engaged in the manufacture of munitions of war.

GAS ENGINE. See Internal Combustion Engine.

GAS FOR MOTOR CARS. See Automobiles.

GASOLINE. See Automobiles; Chemistry, Industrial; Petroleum.

GAS POISONING. The latest variety of poison gas used by the Germans in 1917 in the war was known familiarly as "mustard gas" and was projected in liquid form, in shells. When the liquid comes in contact with the clothing or skin, or when soldiers move over ground wet with the liquid, burns varying in degrees of severity will result. When inhaled the gas gives rise to severe inflammatory changes in the lungs, inflammation of the eyes and upper respiratory passages. The liquid is chemically dichlorethylsulphid, has very little odor, and the symptoms do not make themselves apparent until several hours after the inhalation of the gas, due to the fact that its poisonous qualities are evolved only in the presence of moisture. The symptoms may be summed up briefly as follows: Several hours after being "gassed" the individual is attacked by epigastric distress and severe vomiting, then ensues a severe conjunctivitis, with photophobia, profuse lacrimation, and swelling of the eyelids. There are also laryngitis and bronchitis, with a sense of constriction and tightness of the chest, aphonia, and paroxysmal coughing. When the liquid has come in contact with the skin, peculiar burns, with blistering and subsequent desquammation, are observed. The diffuse bronchitis may progress into bronchopneumonia or pulmonary edema. In very severe cases death may occur within a few hours after the appearance of the symptoms; while in the less severe cases, convalescence is rapid. Soldiers are warned to avoid contact with the liquid and to apply their respirators when there is any suspicion of the presence of mustard gas. The English box respirator furnishes the best protection for the eyes and lungs. Treatment consists in giving the patient an entire change of dry clothes, putting him to bed in dry, well ventilated sleeping quarters, and in meeting the various complications as they arise.

GASTRON. A solution of gastric juice extracted from the mucous membrane of the stomach of the pig and containing the activated principles of the gastric cells, the enzymes, and the associated organic and inorganic constituents, in an acid menstruum containing 25 per cent of glycerin. Its acidity corresponds nearly to 0.25 per cent of hydrochloric acid. Gastron was claimed to have all the characteristics of the normal gastric secretion. It is a viscid, slightly opaque, straw-colored fluid, and is given in 1 to 2 fluid drachms doses, in cold or acidulated water, in disorders of the digestion.

GAUPP, Ernst Wilhelm Theodor. A German anatomist, died in January, 1917. He was born at Beuten in Upper Silesia and was educated at Jena, Königsberg, and Breslau. He taught at Jena, Breslau, and Freiburg, and from 1897 at Königsberg, where he was extraordinary professor and after 1912 ordinary professor and director of the Anatomical Institute. In 1909 he received the Carus prize of the Leopold Academy. Between 1896 and 1904 Gaupp brought out a new edition of Ecker's *Anatomie des Frosches*, and he contributed to Hertwig's *Handbuch der Entwicklungslehre*, and the chapter on "Morphologie der Wirbeltiere" in *Kultur der Gegenwart* (1913).

GEDDES, Sir Eric Campbell. First Lord of the British Admiralty. Sir Eric Geddes was born in India of Scottish parents and was destined for the army. At seventeen years of age, however, he left the school he was attending in England and sailed for America to get practical experience in engineering. He worked there for four years with the Homestead Steel Works and the Baltimore and Ohio Railroad. He decided that railroading was to be his profession. He spent the next six years in building and operating railroads in India, until he was called to England by the North Eastern Railroad Company in 1903. When the war broke out his work attracted the attention of Lord Kitchener, who had called into consultation the railroad managers to facilitate the transportation of troops to the continent. Kitchener retained Geddes in the War Department to superintend the transportation of munitions from the factory to the front. After the Battle of the Somme Sir Eric was sent to France to help the French government to reorganize the congested railways. Sir Douglas Haig kept him in France as the Director General of Transportation. Later he became Deputy Director General of Munitions under Lloyd George.

As there had been dissatisfaction with the way the submarine menace was being handled there was a general shakeup in the Admiralty at the beginning of 1917. Sir Eric became a member of the Board of Admiralty, with the temporary rank of vice-admiral and the title of Controller of Shipping. In July he succeeded Sir Edward Carson as the First Lord of the Admiralty. Arthur H. Pollen, the British naval critic, says of him, "it is Geddes's secret to see things as they are, and with such luminous simplicity that he is never in doubt as to what he wants done."

GEOGRAPHICAL SOCIETY, American. A scientific society organized in 1852, with headquarters at Broadway and 156th Street, New York City. During 1916 the society undertook to extend its activities along a number of different lines. It gave large support to the Crocker Land Expedition. In January, 1916, the *Bulletin* of the American Geographical Society was changed to the *Geographical Review*, a new magazine of broader scope and larger size, under the editorial management of Dr. Isaiah Bowman, Director of the Society.

During 1917 about 33,000 persons attended the public exhibitions of the society, which consisted of war maps and maps illustrating the economic geography of the world. The latest explorations were all shown on maps directly after reports were received. The society inaugurated a series of special publications of which one volume a year is to be issued. The first volume, entitled *The Andes of Southern Peru*, by Isaiah Bowman, was published in December, 1916. This was followed in 1917 by a second volume, entitled *The Frontiers of Language and Nationality in Europe*, by Leon Dominion. Both of these volumes include numerous striking photographs, sketches, and maps. For 1918 the society had in preparation an extraordinarily noteworthy and interesting book on the relation of topography to military strategy on the European battle fronts. These publications are distributed free of charge to all Fellows of the society.

The extent to which the society's ideal of public service is appreciated is shown by the fact that by the end of 1917 its membership consisted of over 3600 Fellows. The officers for 1917 were: President, John Greenough; vice-presidents, James B. Ford, Paul Tuckerman, Anton A. Raven; foreign corresponding secretary, Prof. William Libbey; domestic corresponding secretary, Archibald D. Russell; recording secretary, Hamilton Fish Kean; treasurer, Henry Parish, Jr.

GEOGRAPHIC SOCIETY, National. In January, 1917, the society published the results of the 1916 expedition under Dr. Robert F. Griggs to the Katmai region of Alaska, and on May 28, 1917, a second expedition under his leadership set sail from Seattle to complete the exploration of this volcanic district and of the Valley of Ten Thousand Smokes, previously discovered (see Alaska and Explorations).

The society contributed to the Labrador Expedition under the leadership of W. E. Clyde Todd, curator of Ornithology of the Carnegie Museum, Pittsburgh, of which Alfred Marshall of Chicago was a co-leader. Setting out from the Gulf of St. Lawrence in the early spring of 1917, this expedition undertook geographic and biological investigations and elaborate photographic work. In the interior of Labrador, lakes and rivers hitherto unknown were discovered and mapped and data collected which form a notable addition to geographers' knowledge of this region.

The Flag Number of the *National Geographic Magazine*, October, 1917, was a remarkable issue of the society's monthly publication. It contains 1197 reproductions of past and present flags of the world, in beautiful color work, and 300 illustrations in black and white, with history and descriptions of the various flags. Five thousand copies were requisitioned for the use of United States army officers and an equal number for the use of naval officers. Two publications recently brought out are an excellent *Bird Book* and a fourth series of *Scenes from Every Land.* The membership of the society, of which Gilbert H. Grovenor is director and editor, is now nearly 650,000.

GEOLOGY. The governmental geological surveys continued their operations during 1917 and the many workers in private capacity added their quota to the volume of contributions which hardly fell behind that of preceding years. National service was emphasized, of course, in much of the work. The preparation of areal maps, the study of ore supplies, and the investigation of materials adapted for military road-making had a prominent place in the list of activities contributory to the national welfare. A broader view of the matter may be had from reading of the brochure *What a Geologist Can Do in War* which was prepared by R. A. F. Penrose and published by the National Research Council.

AGE OF THE VERO MAN. The discovery of human remains in supposedly Pleistocene surroundings was noted in the YEAR BOOK for 1916, wherein the evidences in support of the contemporary burial of the bones and marks of culture, as interpreted by E. H. Sellards, were set forth. It was recognized that further study was needed to confirm the preliminary examination, more particularly to correlate the fossil stratum with some well recognized member of the Pleistocene, and to substantiate the geological evidences by the inferences to be drawn from the conformation of the bones themselves. The opinion of geologists seems to hold some doubt that the burial can be placed far back in the Glacial period, on account of the marks of reworking of the deposit by stream action, although early Pleistocene animal bones are found in the vicinity. A. Hrdlička expressed the view on anthropological grounds that the bones belong to the modern stage of human development and that they agree in most of their features with those of the Indian. They may well be prehistoric, or pre-Columbian, but show no evidence of an antiquity comparable to that of the animals represented by the associated fossils. Furthermore, the fragments of pottery taken from the site seem to belong to the work of the mound-building Indians of Florida. On the whole, therefore, it would appear that the case for Pleistocene man in America has not yet been substantiated by indubitable proof.

RETREAT OF ALASKAN GLACIERS. The shrinkage of the large Alaskan glaciers has been in progress for some time. L. Martin found that Barry glacier in Prince William Sound had retrograded at its foot about two miles in the interval between 1899 and 1910. A more recent study by B. L. Johnson would indicate a steady continuance of the retreat, for the ice-front in 1914 was 8200 feet farther back than in 1910, as measured along the eastern edge where the waning has been at a maximum. In the last survey the glacier was found to have almost severed connection with Coxe glacier with which it had been confluent.

PLEISTOCENE CHANGES OF SEA-LEVEL. A study of the submergence of the St. Lawrence Valley during the Glacial period, after the withdrawal northward of the ice-sheet, has been made by Kirtley F. Mather who supplied some interesting computations of the variation of the strand-line during successive intervals. In its maximum stage the ice may have covered an area corresponding to a circle with a radius of 14°, or 966 miles on the earth's surface. If a thickness of 5000 feet be assumed as prevailing in the central mass and a slope for the upper surface increasing from zero to 51 feet near the margin, it is found that the mass of ice would involve a lowering of the sea-level of 82.5 feet vertically, as result of the withdrawal of water for its accumulation. As a counterbalancing factor, the gravitative attraction of the ice would distort the bordering ocean so that the shore-line would advance 136 feet above the general level of the undisturbed waters. Under the conditions named, it appears, therefore, that the strand-line must have shown a positive movement, that is the sea invaded the land to a distance of over 50 feet. It is hardly to be doubted, however, that the formation of the several ice-sheets in North America and Europe was practically contemporaneous, so that the cumulative effects of all must be reckoned with in ascertaining the resultant changes of sea-level. If all the area thus covered bore a cap 5000 feet thick on the average, the sea would have been lowered 235 feet by the abstract of water, more than enough to counterbalance the effects of the gravity pull. The result must have been a negative migration of the strand-line. The conclusion seems inevitable that the period of ice accumulation was accompanied by a receding shore and the period of ice retreat by the advance of the sea upon the land. The factor of isostatic compensation is difficult to estimate; field data in the Great Lakes region lead to the inference that readjustments in consequence of changing load upon the land surface were gradual and that elevation lagged considerably behind the removal of the ice. Marine fossils of post-Glacial age are found in the Hudson Bay drainage area as high as 450 feet above tide, showing uplift of that amount since the Labrador ice-sheet shrank to a diameter of 200 or 300 miles.

LAKE BONNEVILLE. The glacial origin of the expanded waters in the Great Salt Lake Basin, known as Lake Bonneville, so familiar from the descriptions by Gilbert, has been questioned by C. R. Keyes on the evidence of certain topographical features. The old lake, with its splendidly marked shore features, had come to be regarded as a classic example of the type that was brought into existence by the moist climatic conditions that prevailed during the Glacial period. It covered some 20,000 square miles, compared with 2000 miles for the present remnant, and had a depth of several hundreds of feet. Keyes regarded the development of the old lake as a special phase in the history of a trunk stream whose waters were held back in their course by the appearance of a mountain barrier which arose too rapidly for the river to master, thus leading to the impending of the flow. The neighboring Green River, on the other hand, by reason of its greater size was able to hold its own and continue on its course across the barrier presented by the bulging Colorado dome. The subsequent shrinking of the lake that was thus brought into existence came about by the diversion of the headwaters of Virgen River. The lake then evaporated until equilibrium was finally reached between wastage and the greatly reduced inflow, as prevails at the present time. This view was novel and interesting, but required substantiation from a broader field of observation than seemed to have been available for the present article.

Correlation of the Permian Strata. The unsatisfactory state of the current methods of correlation as applied to the Permian and Carboniferous rocks of the West was noted by W. T. Lee. The lack of agreement among geologists in practice arises from the conflicting testimony afforded by the vertebrate fossils on the one side and the plant remains on the other, and in part may be ascribed to the different interpretations placed upon the fossils. To the solution of the problems geologists should apply the evidences to be had from the study of structural and lithological features of the strata. For example, the upper or red portion of the beds in New Mexico and elsewhere considered as doubtful Pennsylvanian in age is lithologically so different from the lower or undoubted Pennsylvanian that it might properly be ranked as a separate formation with an independent name. These red beds of brackish-water or aeolian origin lie unconformably upon marine limestone and supply lithological and structural evidence of orogenic movement, and invigorated erosion in the Rocky Mountain region preceding the time of their deposition. Sufficient data have been uncovered to indicate that certain unconformities of seemingly different horizons may be correlated and that they may indicate a general unconformity between the true Pennsylvanian and the rocks of questionable age overlying that system.

Petrology of Anorthosite. The origin of the rock called anorthosite presents a problem more or less distinct from that of other igneous rocks on account of its peculiar composition which consists almost wholly of the feldspar species labradorite. The temperature of fusion for such a material is very high, as compared with the rocks of mixed composition which may remain liquid at fairly low temperatures. In the latter class the minerals exist in mutual solution. N. L. Bowen considered that anorthosite might have been formed by the precipitation of feldspar from solution in a mixed magma that originally held large amounts of the iron-magnesia minerals. The latter were first separated by the operation of gravity. Then, at a later stage, when the liquid had become distinctly lighter and was of diorite-syenite composition, the plagioclase crystals accumulated by sinking and formed the masses of anorthosite, leaving behind in the upper zone a liquid of syenitic or granitic composition. It results from this method of origin that anorthosite rarely occurs in dikes and never as an effusive rock. One of the larger bodies of anorthosite occurs in the Adirondacks. where it constitutes the central massive with the higher peaks and Bowen regarded the body as a huge laccolith that was intruded in the older Grenville sedimentary series which is still well represented in the bordering Adirondack area. The syenite and granite of the region represent later invasions of the magma residual and occupy a position above the anorthosite. The theory in its general outline was attractive from its simplicity, but in the details of its application to the Adirondack region it was open to some objection, as has been shown by H. P. Cushing.

Volcanic Ash in the Great Plains. E. H. Barbour called attention to the enormous spread of volcanic ash in the Middle West and the evidence it afforded of the former activity of volcanoes in the Rocky Mountains. A deposit of the material practically extended over the whole of Nebraska and reached into the neighboring States of Colorado, Kansas, and South Dakota. The accumulation in Nebraska ranges from 6 to 10 feet thick and locally has a depth of 50 feet or more. The age of the beds was believed to be Tertiary and Pleistocene. The material is a practically pure rhyolite tuff, that is it corresponds in composition to a siliceous igneous rock. It was called pumicite and found some industrial application by reason of its heat insulating properties.

Origin of Dolomite. The use of staining solutions in bringing out the relations of calcite and dolomite was advocated by E. Steidtmann in a paper which also attacked the problem of the derivation of dolomite. The process of dolomitization in many instances involved replacement and this might operate locally without regard to openings like those afforded by joints and bedding planes. It is held that most dolomites were formed in the sea before the consolidation of the carbonate materials, but underground circulations are responsible in part for the conversion of limestone to dolomite.

Plasticity and Flowage of Rocks. The effects of plastic yielding and flowage are frequently to be observed among those rocks which at one time were deeply buried in the earth. It would appear that under the conditions of cubic compression which obtain at depths in the earth's crust, assisted no doubt by the heat incident to the temperature gradient, hard rocks lose their rigidity and accommodate themselves to strain by movement in one form or another. The relative pressures necessary to produce such movement and the methods of accommodation are not determinable, of course, by direct observation, and the only information to be had is through the avenue of laboratory experimentation. F. D. Adams and J. A. Bancroft contributed some results of an investigation on the artificial deformation of rocks, in continuation of the work which the former had had under way for several years. It was found that all the rock varieties used in the experiments, inclusive of such hard materials as granite and diabase, could be deformed by differential pressure at ordinary temperatures and that the ease of deformation for each variety depends upon the hardness of the component minerals. In the softer rocks, like alabaster, steatite, and marble, deformation is produced by movements within the crystal particles along gliding planes: in the harder materials it is accompanied by granulation. Applying the laboratory data to the behavior of rocks in the earth's crust, it is noted that the stress necessary to cause deformation increases rapidly with the load, that is with the depth below the surface. This is important, for it shows that a uniform side thrust might result in the folding and deformation of the upper layer and yet not suffice to produce movement in the lower part of the same mass. Consequently, it seems reasonable to suppose that flowage in rocks takes place at moderate depths rather than in the very remote regions of the crust. The investigation seems to have an important bearing on the principle of isostasy as interpreted by some of its adherents.

ISOSTASY. The latest volume of the series of the United States Coast and Geodetic Survey publications relating to this subject gave the results of gravity determinations over a larger area than heretofore covered and was by so much enlarged in scope. The data were assembled by William Bowie from 219 stations in the United States, 42 in Canada, 73 in India, and 40 in other countries. The conclusions tend to confirm the deductions which were based on the earlier studies. The hypothesis of isostasy, as may be explained, implies that every topographic feature is balanced by a corresponding variation in density of the underlying column of rock down to a uniform level—the level of isostatic compensation. Thus, every unit column contains the same mass. Bowie in his recent work referred to placed the depth of compensation for the United States as a whole at 60 kilometres; for mountainous regions by themselves the value is 111 kilometres and 95 kilometres, respectively, according to somewhat different assumptions. The best value for the depth seems to lie between 97 kilometres, the mean of Hayford's determinations, and 95 kilometres which is the accepted value for mountainous regions. In a criticism of the conclusions of Hayford as to the depth and rate of compensation, W. D. McMillan expressed the view that these matters were still unsettled, inasmuch as they were partly based upon assumptions not capable of determination. Any one of the following four possibilities would seem to fit in with the observed data: uniform compensation, uniformly decreasing compensation, compensation in a subterranean layer, and the Chamberlin method of compensation. And there is a possibility that some other non-isostatic principle may yet be discovered that will apply equally well to the above. The virtue of the theory in its present form is that it lays down a definite scheme for coördinating the variations of density.

ECONOMIC GEOLOGY. *Oil-shales.* The great resources of oil-bearing shale that occur in the United States are attracting some attention, although as yet they have not been economically developed. They constitute a resource for the future, after the more easily obtained oil from wells no longer suffices to meet the demand. A summary of the more important deposits was presented by D. E. Winchester of the United States Geological Survey. The shales are found in various geological formations that range from Devonian to Tertiary in age. The Green River beds (Eocene) of Colorado, Utah, Wyoming, and Nevada afford the richest material thus far discovered, comparing favorably in oil content with the oil-shales of Scotland and France. It is estimated that an area of 5500 square miles is underlain by beds thick enough to mine and rich in oil; at many places they are 100 feet thick in the aggregate and their content of oil runs as high as 55 gallons or more to the ton. The origin of the oil is traced to the abundant plant life of the time, rather than from distillation of animal remains which are much less in evidence. At any rate there seems to be no doubt that the oil is indigenous to the shale and has not migrated into its place as maintained by some writers. The oil recovered by distillation in a retort exists partly as such and in part is produced by the breaking up of the organic compounds during the process. Besides oil there is produced ammonia, in addition to noncondensed gases of value. The shales of Carboniferous age from the coal mines of Kentucky, Illinois, and western Pennsylvania show good tests. The Devonian shales of the eastern United States are relatively low grade, their yield not exceeding 20 gallons to the ton.

THE MAGMATIC ORIGIN OF SULPHIDES. The occurrence of metallic sulphides in direct association with the igneous rocks and in bodies which lack the characteristics of open-fissure fillings or veins is a form of ore-deposit about which centred considerable controversy. A well-known example of the kind is the nickel-copper deposits of Sudbury, Canada, which furnish most of the world's nickel supply. In the earlier studies of the district by L. Walker, A. E. Barlow, and A. P. Coleman it was recognized that the deposits are found along the edges of an intrusive sheet of norite (a basic igneous rock) and that the relations between the ores and the containing rocks in many placers are in contrast with those presented by veins. Coleman has given a very detailed account of the geology of the ore-bodies and presented therein much evidence in favor of the view of a magmatic derivation of the sulphides. According to his explanation the ores have accumulated in most places by gravity segregation, although in some instances subsequent rearrangement may have taken place through the operation of underground solutions. This theory finds a parallel in the undoubted segregation of oxide ores in the igneous rocks, and the main objection to its application seems to arise from the rather sparse distribution of sulphides in most igneous rocks, whereas the oxides of iron, titanium, and a few other metals are not uncommon. In the monographic report of the Royal Ontario Nickel Commission C. W. Knight ascribed the Sudbury ores to the process of hydrothermal replacement, basing his conclusions largely upon microscopic evidence of the relations of the sulphide minerals. A. M. Bateman in an independent paper subjected both theories to criticism. He advocated magmatic derivation as the best explanation for some of the occurrences, but finds that most of the bodies have resulted from intrusion of igneous rock heavily charged with sulphides. The hydrothermal process seems applicable in individual instances.

GEORGETOWN UNIVERSITY. A Roman Catholic institution for the education of men, at Washington, D. C. In the fall of 1917 there were 1117 students and 162 members of the faculty. Volumes in the library numbered 136,000. The class of 1869 gave a fund of $125,000 to the university in 1917. Georgetown was founded in 1789. President, Very Rev. Alphonsus J. Donlon, S.J.

GEORGE WASHINGTON UNIVERSITY. A non-sectarian co-educational institution at Washington, D. C. There were 2194 students registered in the several departments during the year 1916-17 and there were 252 members of the faculty. Volumes in the library numbered 50,500. Productive funds amounted to $161,413.96 and the income therefrom in 1917 to $6,496.41. During 1917 $5127.47 was received toward the law school building fund and there were other gifts of a miscellaneous character. George Washington was founded as Columbian University in 1821. President, Charles Herbert Stockton, LL.D.

GEORGIA, POPULATION. The population of the State in 1910 was 2,609,121, and on July 1, 1917, it was estimated to be 2,895,841.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	4,500,000	72,000,000	$115,200,000
	1916	4,000,000	62,000,000	62,000,000
Wheat ...	1917	244,000	2,074,000	6,015,000
	1916	334,000	3,808,000	7,083,000
Oats	1917	650,000	10,400,000	12,168,000
	1916	860,000	16,770,000	13,248,000
Rice	1917	900	27,000	53,000
	1916	800	16,000	14,000
Potatoes .	1917	19,000	1,596,000	3,112,000
	1916	15,000	900,000	1,575,000
Hay	1917	535,000	*a* 562,000	11,240,000
	1916	400,000	460,000	7,452,000
Tobacco .	1917	1,600	*b* 1,600,000	912,000
	1916	1,300	1,584,000	414,000
Cotton ...	1917	5,028,000	*c* 1,820,000	262,080,000
	1916	5,277,000	1,821,000	181,183,000

a Tons. *b* Pounds. *c* Bales of 500 pounds gross weight.

MINERAL PRODUCTION. The production of coal in the State in 1916 was 173,554 net tons, valued at $310,093, compared with 134,496 net tons, valued at $231,861 in 1915. The production of iron ore in 1916 was 252,143 gross tons, valued at $413,259, compared with 101,719 gross tons, valued at $186,083 in 1915. The production of barytes in 1916 was 104,784 short tons, valued at $401,295, compared with 31,027 short tons, valued at $102,825 in 1915. The production of bauxite in 1916 was 40,388 long tons, valued at $239,089.

TRANSPORTATION. The total railway mileage in 1915, the latest year for which statistics are available, was 7295 miles of single main track.

FINANCE. The statistics for finance are not available for a later year than 1915. On January 1, of that year there was a balance in the treasury of $787,455. The receipts for the year amounted to $10,158,134, and the disbursements amounted to $10,102,791, leaving a balance in the treasury on January 1, 1916, of $842,799. The total bonded indebtedness of the State amounted to $6000.

EDUCATION. The statistics for 1916 are the latest available. The total number of children of school age in the State in that year was 795,484. The total enrollment was 659,548, and the average daily attendance was 452,157. The total number of school houses in the State was 7894. The value of school property was $15,048,919. The total number of teachers was 14,831. The average monthly salary paid to white males was $61 and to white females was $46. That paid to colored male teachers was $30.70 and to colored female teachers was $22.

POLITICS AND GOVERNMENT. There were no general elections in the State during 1917. A special election was held in the fourth Congressional District as a result of the resignation from Congress of Judge W. C. Adamson. W. C. Wright was elected to succeed him. In the eighth Congressional District, Judge Charles Brand succeeded Congressman Tribble, deceased. Judge B. D. Evans was appointed presiding judge of the Southern District of Georgia, U. S. Court and was succeeded on the State Supreme Bench by Judge Walter F. George of the State Court of Appeals, who in turn was followed in the Appellate Court by Judge Frank Harwell.

In the early part of the year, Governor Harris caused an official investigation of the lynching evil to be made. The findings of the investigation were to the effect that the State is grossly misrepresented and the condition exaggerated in the press of the country. During 1917 only two lynchings were reported in the State. The recruiting office of the United States army reports that from April 1 to December, 1917, 11,953 men had enlisted in the national service. A disastrous fire, on May 21, destroyed a considerable part of Atlanta. See article FIRE PROTECTION.

LEGISLATION. The most important acts passed by the legislature of 1917 are noted below.

A measure was enacted providing for the establishment and maintenance of agricultural schools. An act was passed designed to prevent desecration of the flag or national emblem of the United States. There was created a home guard or State constabulary.

An act was passed providing for primary election by political parties of candidates for certain offices by the county unit system. An agricultural, industrial, and normal school was established as a branch of the University of Georgia. A resolution was passed appointing a commission to draft a bill regulating the establishment of banks. The legislature passed a resolution endorsing the President of the United States and assuring him of the confidence and loyalty of the people of Georgia.

STATE OFFICERS.* Governor, Hugh M. Dorsey; Secretary of State, Philip Cook; Treasurer, Wm. J. Speer; Comptroller, W. A. Wright; Attorney-General, Clifford Walker; Adjutant-General, J. Van Holt Nash; Superintendent of Education, M. L. Brittain; Commissioner of Agriculture, J. J. Brown—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, Wm. H. Fish; Presiding Justice, Beverly D. Evans; Associate Justices, M. W. Beck, Samuel

* Took office July, 1917, Dorsey succeeding Nat E. Harris, as Governor.

C. Atkinson, H. W. Hill, and S. P. Gilbert; Clerk, Z. D. Harrison.

GEORGIA, UNIVERSITY OF. A State educational institution located at Athens, Ga. In the fall of 1917 its enrollment, normally about 700, had been somewhat reduced because of the effect of war. Volumes in the library numbered 42,000. Productive funds amounted to about $400,000. The university was founded in 1801. President, David C. Barrow, LL.D.

GERARD, JAMES W. See UNITED STATES AND THE WAR.

GERMAN-AMERICANS. See UNITED STATES AND THE WAR.

GERMAN EAST AFRICA. A protectorate of Germany extending from the Indian Ocean inland to Victoria Nyanza and lakes Tanganyika and Nyassa. It lies between the East Africa Protectorate (British) at the north and Portuguese East Africa at the south, the northern limit on the coast being the mouth of the Umba River and the southern being lat. 10°40′ S., near Cape Delgado. The protectorate touches the Belgian Congo, Northern Rhodesia, and the Nyassaland Protectorate. Estimated area, 384,170 square miles. Estimated population, about 7,666,000. At the beginning of 1913, whites numbered 5336, of whom 4107 German. The natives consist mostly of tribes of mixed Bantu race. The capital is Dar-es-Salaam, chief seaport and terminus of the Central Railway. East Africa is the largest, most populous, and most valuable of the German oversea possessions. Germany established the protectorate in 1885, and in 1890 acquired the rights of the sultan of Zanzibar over a strip of coast territory by payment of 4,000,000 marks. In the great war German strength was greater and more persistent in East Africa than in any other protectorate.

The natives engage in agriculture and grazing to some extent, and German settlers have established plantations, mostly near the coast, which produce coconuts, tobacco, rubber, coffee, vanilla, cotton, sisal, cacao, etc. In 1912 there were 3,950,250 cattle and 6,398,300 sheep and goats reported as belonging to natives, and 43,617 cattle and 41,647 sheep and goats to whites. Imports and exports in 1913 were valued at 53,358,000 and 35,550,000 marks respectively; about half the trade was with Germany. Principal exports in 1912 and 1913 respectively: sisal, 7,359,000 and 10,710,000 marks; rubber, 8,426,000 and 6,567,000; hides and skins, 4,067,000 and 5,591,000. There are two railway lines, with nearly 1000 miles of track. The Usambara Railway, with 219 miles of track, runs from Tanga, a northern seaport, to Muhesa, near Mount Kilimanjaro. The Central, or Tanganyika, Railway, with 777 miles of track, connects Dar-es-Salaam with Lake Tanganyika via Mpwapwa, Kilimatinde, Tabora, and Ujiji. During the occupation of the country by British and Belgian forces, the Central Railway was closed for trade purposes. But toward the end of 1917 it was announced that all towns on the line between Dar-es-Salaam and Tabora (530 miles) would be reopened to trade January 1, 1918. The northern part of the protectorate had already been reopened to trade. Dar-es-Salaam has telegraphic communication with Zanzibar, the coast towns, and various inland centres, and, at Ujiji, with the African transcontinental line. Reported number of telegraph stations, 34; post offices, 51. There are several radiotelegraph stations. The budget for 1915-16, as well as that for 1914-15, balanced at 61,271,000 marks; the estimated revenue consisted of 20,471,068 marks local receipts, 3,300,000 marks imperial contribution, and 37,500,000 marks loan.

HISTORY. Upon the withdrawal of Gen. Smuts to attend the special session of the war cabinet in England the command in East Africa was given on January 20 to Lieut. Gen. A. R. Hoskins who had been the commander of the first three divisions under Gen. Smuts. According to official announcements the Germans in the Mahenge region were retiring southward before the advancing columns of Brig. Gen. Northey. From this time on in the autumn the small, but obstinately resisting German forces were gradually crowded back by the British and cooperating Belgian troops into the Mahenge region. On October 10, it was announced that the Belgian force had occupied Mahenge; between October 23 and November 8 the British columns drove the enemy eastward capturing prisoners and munitions, and by the last week in November the German forces were cleared out of the country. The campaign terminated on November 27 with the surrender of a German force and considerable body of natives. Thus the last German colony in Africa to hold out passed into the hands of the Entente Allies.

GERMAN EVANGELICAL SYNOD OF NORTH AMERICA. Congregations of this denomination are to be found in practically all the States of the Union, though they are most numerous in the Central and North Central States. There were in 1917 approximately 1100 ministers, 1400 churches, and 275,000 communicants. The value of the church property is estimated at $1,500,000 and over $1,000,000 a year is contributed for the maintenance of churches. Missions are carried on in India where there are over 4000 adherents. The Eden Publishing House, the official publication agency of the denominations, is in St. Louis, Mo., and there is a branch in Chicago. There are five periodicals published at St. Louis, besides Bible lessons and Sunday School helps. The Eden Theological Seminary is maintained at St. Louis, a college at Elmhurst, Ill., and Fort Collins Seminary. There are also charitable institutions for superannuated ministers, for the widows and orphans of deceased ministers, and for orphans.

GERMAN LITERATURE. That the world's greatest war would at the end affect the literary production of Germany and Austria was to be expected. But as even so exact a science as that of statistics can in the hands of efficient camoufleurs be employed to hide and to pervert the truth, the decrease in book publication in Germany cannot be stated in bald numbers, but must rather be inferred from random remarks in inofficial communications. Glimpses of the real conditions can be obtained through the medium of those who have not been swept off their feet by the epidemic of national megalomania and have retained their independent judgment regardless of imperative suggestions from those in authority. Such a voice in the wilderness is Hermann Hesse, who, having settled in Switzerland some time before the war, secured for himself a perspective, which his colleagues within the German borderlines were lacking. He has freely expressed his views in the *Züricher Zeitung* and other Swiss publications, and when in the course of the past year the *Frankfurter Zeitung* was struck by the decrease of poetical production and solicited an explanation from the poets themselves, Hesse began his reply with the following remarks: "Of course the best among us are silent. Is that at all surprising? Do you want them to edit reports? I, for my part, am incapable of it." Such data as could be obtained through Swiss sources—German books and periodicals no longer reaching this country—show indeed a marked diminution in works of fiction and verse, while the drama seems to be less affected.

FICTION. There was a time when of the two brothers, Thomas and Heinrich Mann, the latter was spoken of as the less talented. The reason for this was obvious; for Thomas appealed to the larger class of German readers by his powerful and sympathetic pictures of Hanseatic characters and *milieu*, while Heinrich, the finer and broader mind of the two, secured from his very début a steadily increasing circle of admirers among critics with the larger European view. Thus it was natural that Heinrich Mann should become a valued contributor to the *Forum*, a periodical founded by Wilhelm Herzog to voice human thought *vs.* narrow Pan-German sentiment, and promptly suspended for doing so. But this did not in the least affect the creative spirit of Heinrich Mann, who has since published several notable books. The most recent is a story of political and social conditions. *Die Armen*, which has been compared with Victor Hugo's *Les Miserables*, and is bound to rank among the leading novels produced since the war. It is a powerful picture of contemporary life, from so lofty a standpoint as to be of lasting significance, and it is bound to outlive the works of many writers hitherto ranked higher in German letters, not excepting Thomas Mann. Compared with that book, the latest work of Arthur Schnitzler, the sentimental story of a physician in a health resort, *Dr. Grasler, Kurarzt*, is a very weak production. Paul Ilg's *Der starke Mann* suggests by its title a tribute to the popular idea of the over-man. Peter Nansen, one of the group of writers who owe their prominence to the patronage of S. Fischer, has written a story, *Die glückliche Ehe*, which could have been told in the few words of a French anecdote. The stories of Hertha Koenig, *Die kleine und die grosse Liebe*, and Maria Steinbach, *Eva Thorring*, are novels of sentiment. Volumes of short stories are more numerous. Foremost among them is the book by Karin Michaelis, *Opfer* (Victims), who, although she has allowed herself to be more or less adopted by the Germans, paints with gripping veracity the tragedies of the homeless thousands, who wander about the battlefields of Poland and other war-stricken portions of the Eastern Front, incapable of uttering a word beyond the heart-rending *Do domu*—"home!" That book has regained for her sympathies forfeited by the publication of her sensational sex-novel *The Dangerous Age*. Hermann Sudermann has turned to his native soil close to the borderline of ancient Lithuania and has written a volume of *Litauische Geschichten*. It would seem as if the literary life of Switzerland were profiting by the depressing conditions of the German book-market. Swiss publishers are busy bringing out new books and new editions by native writers. Of the former must be mentioned Max Pulver's two stories *Odil* and *Coelestine*, Felix Marti's volume entitled *Die Stadt*, Felix Bernab's *Geschichten und Träume*, and Alfred Huggenberger's volume of stories, sketches, and verse, entitled *Aus meinem Sommergarten*. A collection called *Schweizerische Erzähler* contains Ruth Waldstetter's record of an invalid life, *Tagebuch einer Leidenden*, stories by Robert Walser, Max Pulver, and others. Another collection of stories contains Paul Ilg's *Maria Thurnherr*, Meinrad Lienert's *Alte Liebesgeschichten*, Alfred Huggenberger's *Daniel Pfund*, Alfred Steffens's *Banz*, and Olga Amberger's *In der Glücksschaukel*. New editions of Felix Moeschlin's *Brigitta Roessler*, Joseph Reinhardt's *Geschichten und Bilder*, and Robert Jacob Lang's *Lonz Wargeler* are also doing their share to remind the world of the existence of an indigenous Swiss literature.

DRAMA. The great names in contemporary German drama are missing among the records of the stage in 1917. The greatest success seems to have been achieved by Fritz von Unruh, previously known as the author of books of travel and a drama, *Die Hexe*. The new play which created quite a sensation is *Das Geschlecht*, which envisages the future and contains this interesting episode: A Ulan at the Hohenzollern tomb conjures the spirit of Kleist and confesses his belief in "historical mutation,"—whatever that may mean to a German mind to-day. But the play has been compared with Georg Büchner's *Dantons Tod* and Gerhart Hauptmann's *The Weavers*. Much discussed also was Walter Hasenclever's *Der Sohn*, which had its first hearing in Zurich. Stefan Zweig, the gifted Austrian who interpreted with so much insight the work of the lamented Verhaëren, is the author of a poetical drama, *Jeremias*, which was given in Dresden. Heinrich Lilienfein, who made a promising début some years ago, has appeared with a *Hildebrand* which had a successful *première*. Lee Greiner, another writer who has courted dramatic success for some years, is the author of a renaissance drama, *Herzog Boccanero's Ende*, which had its initial performance in Dresden. Paul Ernst's *Manfred und Beatrice*, Paul Alexander's *Inez de Castro*, and Friedrich Seebrecht's Saul are among other ambitious efforts. Hans Ganz is the author of a tragedy, *Der Morgen*, which had a warm reception in Zurich. Georg Kaiser's *Die Versuchung*, with the sub-title *eine Tragödie unter jungen Leuten*, suggests the ever-popular sex-problem. Heinrich Abbe's *Arminius* by its very title sounded the patriotic note. Max Pulver's *Narkissos und Amazone* did its share to bring the name of the gifted Swiss writer to the fore. Oskar Bendiner's *Der Renegat* is spoken of as a political drama, but reports of its performance and character are lacking. Thaddäus Rittner's *Der Garten der Jugend*, Georg Kaiser's *Die Mutter Gottes*, Paul Kornfeld's *Die Verführung*, and Heinrich Schnabel's *Die Wiederkehr* were among other novelties of the season. An interesting performance was that of Karl Gjellerup's *Das Weib des Vollendeten*, which has for many years been available in book form. Another performance which created no little discussion was that of Oskar Kokoschka's plays, *Mörder*, *Hiob*, and *Der brennende Dornbusch* in Dresden. It did not, however, convince the audience that the talent of the poet-painter lies in the direction of the stage.

A number of one-act plays proved attractive; among them Heinrich Mann's *Der Unschuldige*, Hans Müller-Schlosser's three playlets *Dreierlei Liebe*, and the two plays *Der Schattenbaum* and *Die Stunde Vergessens* by Friedrich Jaksch. Pantomime plays are appearing more frequently. Among them are worthy of mention Karl Vollmoeller's *Venezianische Nacht* and Lion Feuchtwanger's *Pierrot's Herrentraum*.

Numerous comedies were produced during the year. Successful first performances were scored by Robert Saudeck's *Die Distel*, Rudolf Eger's *Das Bild ohne Gnade* and *Die grosse und die kleine Welt*, Fritz Friedmann Frederich's *Klubleute*, Karl Sternheim's *Perleberg*, August Neidhart's *Die Liebesinsel*, Martin Langen's *Der Kuss*, and Victor Fleischer's comedy of medical life, *Kollege Eisenhart*. Wilhelm Scharrelmann, who some years ago collaborated with Johannes Wiegand on *Krieg*—an anti-militarist drama which has been translated and performed in New York under the title *The Wages of War*, has turned to very light comedy in *Die Hochzeit in der Pickbalge*. René Schickelé, the Alsatian, who at the beginning of the war had attempted to act as an interpreter of the dual soul of his people, has also turned to comedy, his *Hans im Schnackeloch* having been successfully performed in Munich. The revival of Georg Büchner's drama, *Dantons Tod*, would have been more significant, if it had taken place in a German city instead of Zurich.

Poetry. Few books of verse have appeared during the year. Max Pulver, whose *Selbstbegegnung* some time ago had won for him the interest of serious critics through the powerful reflection of a soul's struggle, published an epic: *Merlin*. Walter Hasenclever's *Tod und Auferstehung* is a book of thoughtful lyrical meditations. Bruno Frank's *Requiem* also strikes a timely solemn note. Julius Franz Schutz, on the other hand, has succeeded in *Die goldene Westfahrt* in holding aloof from reality; but the tone of the book is somewhat pretentious and artificial.

Biography and Letters. The number of biographical works has been small as compared with that of other years. Wilhelm Dibelius is the author of a life of Charles Dickens, which was so far poorly represented in German literature. Thomas Mann, true to the Prussian spirit which animates him, has written a volume on Frederick the Great. Jules-Coulin, a Swiss writer, is the author of a life of Martin Disteli, the Swiss caricaturist. Emil Ermatinger, himself a novelist of unusual power, has published the third volume of Gottfried Keller's *Leben, Briefe und Tagebücher*, of which he is the editor. It contains a portrait and two pen-and-ink sketches by Keller. Etta Federn offers a contribution to the psychology of Goethe in her book *Christiane von Goethe*. Dr. Hans Gerhard Graef, one of the chief collaborators in the Goethe-Archiv in Weimar, has published *Goethe's Briefwechsel mit seiner Frau*, containing 354 letters of Goethe and 247 of Christiane Vulpius. J. Plotke has published the correspondence between Theodor Storm and Paul Lindau. Paul Lindau's *Erinnerungen* is a memoir of no little value; for although the facile pen of the author was ever more that of a journalist and can hardly make claim to seriousness and thoroughness, he records childhood memories of 1848, he has lived through the wars of 1866 and 1870, and has been a commentator upon his time in periodicals as in books.

Criticism. The most ambitious work of literary history and criticism published during the year is Dr. Max Hecker's *Namen-Verzeichniss zu Goethes Werken*, an alphabetical index with commentaries covering all the names mentioned in the works of Goethe. Another work of formidable scope is Dr. Julius Zeitler's *Goethe Handbuch*, being the first part of a Goethe Dictionary, in the compilation of which the editor has the assistance of thirty-six collaborators. The *Goethe-Jahrbuch* is of less limited appeal; it contains articles on Goethe's theory of color, his attitude towards music, and his relations to foreign countries. In that last article, the author, M. Wahle, makes a point to emphasize Goethe's sympathy for the French and gives an exhaustive survey of his correspondence and intercourse with foreign men of note. Albert Koester has published seven lectures on Gottfried Keller. Prof. R. Unger has written an interesting volume entitled *Weltanschauung und Dichtung*. Carl Spitteler, the Swiss poet, who by his decided allegiance to the cause of the Entente Allies has won the sympathy of the French, is being much written about in both languages. Jean Edouard Spenlé's book *Carl Spitteler l'homme et le poète*, limns his personality. Hermann Ganz, a Swiss writer, offers a stimulating book in *Aesthetische Studien zu Spitteler's Olympischem Frühling*. Ricarda Huch, poet, novelist, critic, and historian, has published an appreciation of Gotthelf, the pioneer of the village story in *Jeremiah Gotthelf's Weltanschauung*. Adolf Frey has published *Conrad Ferdinand Meyer's Unvollendete Prosadichtungen* in two volumes, the first containing fragments and commentaries, the second manuscripts in facsimile.

History. Books on history have been fewer in number than any other class of literary production. A. Stern, the author of a *Geschichte Europas*, has published the seventh volume, which covers European history from 1848 to 1870. Theodor Lindner's *Weltgeschichte seit der Völkerwanderung* has reached its ninth and last volume, which brings it up to the present. Johannes Dierauer, is the author of a *Geschichte der schweizerischen Eidgenossenschaft* which covers Swiss history to the year 1848.

Miscellaneous. An interesting book of travel has been written by Hans Bloesch: *Tunis*. Valuable information about the Czech people is contained in Dr. Zd. V. Tobolk's *Das böhmische Volk*. A work by Walter Koch and Max Hodann, dealing with the *Burschenschaften* of a hundred or more years ago, is called *Die Urburschenschaft* and contains an epilogue by Hans Mühlestein, in which occurs this significant passage: "Help to make way for the European idea, as you made way a hundred years ago for the German." Of course the output of books on the war has been enormous. It seems meet to notice a few of the most important, especially where they voice dissent from the Pan-German keynote. Simultaneous with the foundation of the *Forum* by Wilhelm Herzog, which was quickly suppressed, there had been organized a group of men who called themselves *Neues Vaterland*, among them Prof. Rudolf Goldscheid, the Viennese sociologist, Walter Schücking, and Kurt Einer. Pamphlets written by them have been circulating in Switzerland. Dr. Alfred Fried, the pacifist, has also vigorously condemned the

Hohenzollern policy. He is the author of a work in two volumes: *Der Kampf um Vermeidung des Weltkriegs.* The Swiss historian Zurlinden has published *Der Weltkrieg: Vorläufige Orientirung vom schweizerischen Standpunkt aus*, in which occurs a passage applicable to the Kaiser's elastic Christianity: "Honor to the representatives of the churches of Berne and Zurich, who resolutely reject any compromise between the morals of war and those of Christianity." Mme. Annette Kolb, a writer and lecturer of German-French parentage, who at the beginning of the war created a sensation by accusing the German press of having systematically stimulated national antagonisms, has published her papers on the subject under the title *Briefe einer Deutsch-Französin.* But the most important work of this kind is the latest volume of Hermann Fernau, who by his *Because I am a German* has opened many eyes that would not see before. It is entitled *Durch . . . zur Demokratie.* Walter Rathenau, the great industrial and commercial authority, represents the opposite standpoint at its worst. His volume on the economic problems of the peace to come is likely to be uncompromisingly Pan-German in spirit. Of Gustav Eberlein's *Deutschland im Kriege* and Max Müller's *Frankreich im Kriege* little is known beyond the titles.

NEW EDITIONS. Of Hermann Oldenberg's *Religion der Veden*, first published in 1894, a second edition has been issued. Rudolf Hunzicker has brought out a new edition of Jeremiah Gotthelf's *Jakob's Wanderungen durch die Schweiz.* Pocket editions of works by Gottfried Keller, Carlos Strasser, and Conrad Falke have been put on the market

NECROLOGY. Death has removed two more authorities on English literature who had done valuable work in Germany. Emil Koeppel, who specialized in Elizabethan drama and had written on Chapman, Ford, and Massinger, ranked close after Ernst Sieper, whose loss was recorded in the YEAR BOOK for 1916. K. Bulbring was the other student of English letters who cannot now be easily replaced. Karl Engelberger, the Swiss poet and novelist, died August 11. Dr. Johann Friedrich, a great authority on ecclesiastical history, died during the year. One of the most interesting personalities in German letters was Lady Blennerhassett, a Bavarian by birth, married to an Irishman. She was one of the foremost representatives of the European spirit in German literature. Among her many works are books of a biographical and critical character on Madame de Staël, Talleyrand, Chateaubriand, d'Annunzio, Cardinal Newman, and others.

GERMAN NEW GUINEA. A protectorate of Germany, consisting of Kaiser-Wilhelmsland (the northeastern part of the island of New Guinea), the Bismarck Archipelago, and the German Solomon Islands. The seat of government is Rabaul, on the island of Neu-Pommern. The estimated area is 240,000 square kilometres (92,664 square miles). Kaiser-Wilhelmsland has an estimated area of 70,135 square miles, including Long Island, Dampier Island, and other small islands. Dependencies of German New Guinea are the Caroline, Palau, Marshall, and Mariana islands, excepting Guam. Guam is the largest of the Mariana islands (Ladrones) and belongs to the United States. The area of the dependencies is stated at 2476 square kilometres (956 square miles). The estimated population of German New Guinea and dependencies is over 600,000; at the beginning of 1913, whites numbered 968, of whom 746 German. Germany declared a protectorate over Kaiser-Wilhelmsland and the Bismarck Archipelago in 1884 and acquired the Micronesian dependencies from Spain in 1899. The protectorate was occupied by Australian troops in September and October, 1914, and has since been under Australian military administration. In October, 1914, the Caroline, Palau, Marshall, and Mariana islands were taken by the Japanese, who have since administered them.

The imports and exports of German New Guinea in 1912 were valued at 5,872,000 and 5,041,000 marks respectively. The chief export is copra, valued at 4,052,000 marks in 1912. Imports and exports of the dependencies in 1912, 3,335,000 and 7,046,000 marks. The leading export of the dependencies is phosphate, valued at 4,991,000 marks in 1912; copra, 1,958,000 marks. Imports from Germany to the protectorate and dependencies in 1912, 3,177,000 marks; exports therefrom to Germany, 6,480,000 marks.

For protectorate and dependencies, the budget for 1915-16, as well as for 1914-15, balanced at 3,833,886 marks, the estimated receipts including an imperial contribution of 1,717,022 marks.

GERMAN PROTECTORATES. The overseas possessions of Germany were acquired between 1884 and 1900. After the outbreak of the great war in 1914 they were attacked and conquered by forces of the Allies. Resistance was most prolonged in German East Africa, the conquest of which was completed by December, 1917. The estimated area of the German protectorates aggregates about 1,140,000 square miles, which is about three-eighths of the area of Continental United States, or about five and one-half times the area of Germany. Of the total area, over nine-tenths is in Africa. The population of many districts is conjectural, but the total number of colored inhabitants was estimated before the great war at 13,258,000. The reported white population at the beginning of 1913 was 28,846, of whom 23,952 German; about half the whites (that is 14,830, of whom 12,292 German) were in German Southwest Africa. The following table shows the protectorates, the year of their establishment, their estimated area, and the estimated number of colored inhabitants:

	Year	*Sq. mi.*	*Pop.*
East Africa	1885	384,170	7.661,000
Kamerun	1884	305,019	3.641,000
Togo	1884	33.668	1,032.000
Southwest Africa	1884	322,432	84,000
Total Africa......		1,045,289	12,428,000
New Guinea	1884	92,664	602,000
Caroline, Marshall, Palau, Mariana Islands	1899	956	
Samoa	1900	994	38,000
Total in Pacific...		94,614	640,000
Kiaochow	1898	213	190,000
Grand total.......		1,140,117	13,258,000

The total imports in 1912 were valued at 263.933,000 marks, and the total exports at 200,520,000 marks. In 1912 and 1913 respectively, the imports to the African protectorates amounted to 128,478,000 and 142,031,000 marks; exports therefrom, 103,748,000 and 144,141,000 marks. The figures for total trade include imports to and exports from Kiaochow in the fiscal year 1912-13, amounting to 121,254,000 and 79,640,000 marks respectively. Accordingly the imports and exports of the other protectorates in 1912 were 142,679,000 and 120,880,000 marks respectively; of these, imports from Germany aggregated 88,460,000 marks, and exports thereto 84,946,000 marks.

For the fiscal year 1916, estimated revenue and expenditure of the protectorates balanced at about 179,909,000 marks. The estimated receipts included: local revenue, 78,495,000 marks; imperial contribution, 29,312,000; loans, 60,214,000. Prior to the conquest by the forces of the Allies, each of the protectorates was administered by an imperial governor. Further details may be found in the article German Protectorates in the 1916 volume of the Year Book and in the articles on the several protectorates in that volume and the 1915 volume; see also the articles in this book on German East Africa, German New Guinea, German Samoa, German Southwest Africa, Kamarun, Kiaochow, Togo.

GERMAN REFORMED CHURCH. See Reformed Church in the United States.

GERMAN SAMOA. A protectorate of Germany, consisting of a portion of a group of Polynesian islands in about lat. 14°S. Samoan islands east of long. 171°E. belong to the United States; those west of that meridian constitute the German protectorate. The area of the protectorate is about 994 square miles, including Savaii (652.9 square miles), Upolu (335.5), Manono (3.3), and Apolima (1.8). The population is about 40,000. Whites in 1914 numbered 600, of whom 373 German. The population includes over 2000 Chinese. Administrative headquarters, Apia, in Upolu. The protectorate was established in 1900; it has been administered by the Dominion of New Zealand since August 29, 1914, when a New Zealand force captured Apia.

In 1913 imports and exports were valued at 5,676,000 and 5,339,000 marks respectively, imports from Germany being 1,199,000 marks and exports thereto 2973. The chief export is copra, amounting in 1913 to 4,121,000 marks; cacao, 1,063,000 marks. Exports in 1915 are reported at £262,389. In 1915 there were entered at Apia 72 vessels, of 63,151 tons (exclusive of coasters and ships of war); of these, British vessels numbered 51, of 56,133 tons. Regular steamship communication is maintained with New Zealand. There is a radiotelegraph station at Apia. Reported revenue for the year ended March 31, 1916, £68,663; expenditure, £66,764.

GERMAN SOUTHWEST AFRICA. A protectorate of Germany on the Atlantic, extending south from Angola (Portuguese) to the Cape Province of the Union of South Africa. It does not include the small territory of Walfish Bay, which belongs to the Cape Province. The protectorate extends inland to Northern Rhodesia, the Bechuanaland Protectorate (British), and British Bechuanaland, which is the northern part of the Cape Province; and thus it includes the countries known as Damaraland and Namaqualand. Estimated area, 322,432 square miles. The southern part of the protectorate and much of the east are virtually desert. There are various estimates of the number of inhabitants, but it is agreed that the population is very sparse. Some of the native peoples are diminishing in number. A German estimate made shortly before the outbreak of the great European war placed the total at about 99,000. The natives include Bushmen, Hottentot, Herero, Damara, and Ovampo, the last being the most numerous. Whites on January 1, 1913, numbered 14,830, of whom 12,292 German. The number of Germans, as well as of all whites, was a little more than half the number in all the German protectorates. The capital is Windhuk, which is situated in the centre of the country and has rail connection with Swakopmund and Walfish Bay and with the railway system of the Union of South Africa. The protectorate of Southwest Africa was established by Germany in 1884. After the outbreak of the great war it was invaded by South African forces under Gen. Louis Botha, who completed its conquest in July, 1915. Since then it has been administered by the Union of South Africa. In commenting upon the "war aims address" of Lloyd George, the British prime minister, at the close of the year, Henry Burton, minister of finance for the Union of South Africa, was quoted as saying: "We welcome the reference to the German colonies. It is difficult to exaggerate the feeling in South Africa over any prospect of return of the Southwest Protectorate to Germany, if any concessions are eventually made to German colonization. We can never tolerate her as a neighbor again, especially after the revelations of this war, regarding her purposes and methods."

Much of the country is dry and barren, and agriculture is only slightly developed. Where pasturage is sufficient, stock raising is of some importance. Reported number of cattle in 1913, 205,643; wool sheep, 53,691; mutton sheep, 472,585; Persian sheep, 11,194; goats, 485,401; Angora goats, 31,503. Copper is mined, especially in the Tsumeb and Grootfontein districts, colored marble is worked at Karibib, and diamonds are found in large numbers near Lüderitzbucht. The diamonds are small, but fetch good prices: up to the end of 1913 over 4,690,000 carats had been produced. Imports and exports in 1913 were valued at 43,426,000 and 70,302,000 marks respectively. About half the trade was with Germany. Chief exports in 1913: uncut diamonds, 58,910,000 marks (202,833.58 grams); copper ore, 7,929,000 marks (47,345 metric tons); tin ore, 632,000 marks (209 metric tons); hides and skins, 521,000 marks (345 metric tons); meat and meat products, 159,000 marks; small live stock (as sheep and goats), 144,000; wool, 136,000.

The railways have a total trackage of over 1550 miles, including 147 miles of government railway not in operation and 88 miles of private railway. Railways in operation include the following: Swakopmund to Windhuk, 237 miles; Windhuk to Nakob (on the Cape border), about 540 miles; Seeheim Junction to Lüderitzbucht, about 200 miles; Karibib (on the Swakopmund-Windhuk line) to Otavi, Tsumeb, and Grootfontein, about 310 miles. The portion of the Windhuk-Nakob line which connects Kalkfontein with Nakob is a part of the line built by the British for military purposes after the outbreak of the great war, connecting the railway system of the Union of South Africa with the German railways. This railway, beginning at Prieska in the Cape Province and terminating at Kalkfontein is 314 miles in length, the greater part of this distance being in the Cape Province; it was begun September 7, 1914, and completed June 25, 1915. On July 31, 1915, a 12-mile line was completed between Krantzberg and Karibib, thus putting Walfish Bay in rail communication with the Cape system. Reported length of telegraph line, 2457 miles.

The budget for 1915-16, as well as the budget for 1914-15, showed estimated revenue of 47,820,875 marks and estimated expenditure of 47,820,338 marks; estimated local receipts were 28,199,450 marks, imperial contribution 12,140,013, and loan 7,480,865.

See SOUTH AFRICA, UNION OF.

GERMANY. The German Empire is a constitutional monarchy of central Europe, consisting of 25 federated states and an imperial territory (Reichsland). The dominant state is the Kingdom of Prussia, which comprises about 64.5 per cent of the area of the empire and at the last census (1910) had about 61.9 per cent of the population; and, under the imperial constitution, the King of Prussia is German Emperor. The capital of both the empire and Prussia is Berlin.

AREA AND POPULATION. The area of the German Empire is stated officially at 540,857.5 square kilometres, exclusive of the Baltic and North Sea lagoons and the German part of the Lake of Constance. The equivalent in square miles is 208,825.2; this is a little larger than France (207,129 square miles) or Iowa, Missouri, and Kansas combined (207,725 square miles). The population, as calculated for June 30, 1914, a month before the outbreak of the great war, was 67,810,000.

The last German census was taken December 1, 1910. By states the population according to that census and according to the census of December 1, 1900, together with the area, is shown in the table below. Political status is indicated by the letters following the names: K kingdom, GD grand duchy, D duchy, P principality, FC free city, R Reichsland.

States	*Sq. m.*	*Pop. 1900*	*Pop. 1910*
Prussia (K)	184,663.9	34,472,509	40,165,219
Bavaria (K)	29,298.5	6,176,057	6,887,291
Saxony (K)	5,788.8	4,202,216	4,806,661
Württemberg (K)	7,531.8	2,169,480	2,437,574
Baden (GD)	5,818.6	1,867,944	2,142,833
Hesse (G.D)	2,969.5	1,119,893	1,282,051
Mecklenburg-Schwerin (GD)	5,068.3	607,770	639,958
Saxe-Weimar (GD) .	1,393.8	362,873	417,149
Mecklenburg-Strelitz (GD)..	1,131.1	102,602	106,442
Oldenburg (GD)..	2,482.3	399,180	483,042
Brunswick (D) ..	1,417.8	464,333	494,339
Saxe-Meiningen (D).	952.8	250,731	278,762
Saxe-Altenburg (D).	511.0	194,914	216,128
Saxe-Coburg-Gotha (D) ...	763.2	229,550	257,177
Anhalt (D)	887.8	316,085	381,128
Schwartzburg-Sondershausen (P)	332.9	80,898	89,917
Schwartzburg-Rudolstadt (P).	363.0	93,059	100,702
Waldeck (P) ...	432.8	57,918	61,707
Reuss Elder Line (P)	122.1	68,396	72,769
Reuss Younger Line (P)	319.2	139,210	152,752
Schaumburg-Lippe (P)	131.4	43,132	46,652
Lippe (P)	469.4	138,952	150,937
Lübeck (FC) ...	114.9	96,775	116,599
Bremen (FC) ...	99.0	224,882	299,526
Hamburg (FC) ..	160.0	768,349	1,014,664
Alsace-Lorraine (R) ..	5,606.9	1,719,470	1,874,014
Total	208,825.2	56,367,178	64,925,993

The population of the territory now embraced within the empire was 24,833,000 in 1816; in 1850, 35,397,000; in 1864, 39,392,000; in 1871, 41,058,792; in 1880, 45,234,061; in 1890, 56,367,178; in 1905, 60,641,489. From 1905 to 1910, the population increased 7.1 per cent; from 1871 to 1910, 58.1 per cent. The average density per square mile in 1871 was about 197; in 1910, about 311. At the 1910 census males numbered 32,040,166, and females 32,885,827. In 1910, unmarried males and unmarried females numbered 19,516,340 and 18,591,604 respectively; married males and married females, 11,608,028 and 11,621,685; widowed, 866,676 and 2,583,872; divorced or separated, 49,122 and 88,666.

Communes having less than 2000 inhabitants are regarded as rural. The aggregate population of such communes in 1871 was 63.9 per cent of the total; in 1900, 45.6 per cent; in 1910, 40.0 per cent. The aggregate population of communes having 100,000 or more inhabitants in 1871 was 4.8 per cent of the total; in 1900, 16.2 per cent; in 1910, 21.3 per cent. At the 1910 census, there were 48 communes with over 100,000 inhabitants each, and 576 with over 10,000 each. Of the 48 large communes, 33 are in Prussia, 4 in Saxony, 3 in Bavaria, 2 in Baden. At the 1910 census, the population of Berlin was 2,071,257 (Greater Berlin, 3,710,000); the population of Berlin as calculated for September 1, 1916, was 1,779,107. Communal populations of over 150,000 were as follows in 1910: Berlin, 2,071,257; Hamburg, 931,035; Munich, 596,467; Leipzig, 589,850; Dresden, 548,308; Cologne, 516,527; Breslau, 512,105; Frankfort am Main, 414,576; Düsseldorf, 358,728; Nuremberg, 333,142; Charlottenburg, 305,978; Hanover, 302,375; Essen, 294,653 (1916 estimate, 463,481); Chemnitz, 287,807; Stuttgart, 286,218; Magdeburg, 279,629; Bremen, 247,437; Königsberg, 245,994; Neukölln (formerly Rixdorf), 237,289; Stettin, 236,113; Duisburg, 229,483; Dortmund, 214,226 (1916 estimate, 282,214); Kiel, 211,627; Mannheim, 193,902; Halle, 180,843; Strassburg, 178,891; Berlin-Schöneberg, 172,823; Altona, 172,628; Danzig, 170,337; Elberfeld, 170,195; Gelsenkirchen, 169,513; Barmen, 169,214; Posen, 156,691; Aachen, 156,143; Cassel, 153,196.

At the 1910 census, Evangelicals numbered 39,991,421; Roman Catholics, 23,821,453; other Christians, 283,946; Jews, 615,021; others, 214,152. The following table shows, for the more important states and for the empire, the number of Evangelicals (E), of Roman Catholics (R. C.), of other Christians (O. C.), and of Jews (J.) per thousand inhabitants according to the 1910 census:

	E.	*R.C.*	*O.C.*	*J.*
Prussia	618.2	363.1	4.7	10.4
Bavaria	282.1	706.1	2.0	8.0
Saxony	940.5	49.1	5.3	3.7
Württemberg	685.6	303.6	5.3	4.9
Baden	385.6	593.2	6.2	12.1

	E.	*R.C.*	*O.C.*	*J.*
Hesse	661.5	310.1	5.2	18.8
Mecklenburg-Schwerin	961.8	32.9	2.0	2.2
Saxe-Weimar	944.0	47.9	2.0	3.2
Mecklenburg-Strelitz	953.7	40.0	3.3	2.4
Oldenburg	769.4	222.6	3.3	3.2
Brunswick	939.0	52.4	3.6	3.6
Hamburg	916.3	50.3	4.2	19.2
Alsace-Lorraine	217.8	762.2	2.1	16.3
German Empire	615.9	366.9	4.4	9.5
German Empire, 1900	625.0	361.0	4.0	10.0

The German birth rate of 42.6 in 1876 has never since been equaled. From 1881 to 1888 it stood at approximately 38.5; by the year 1900 it had declined to 37.0; and during the new century it has declined rapidly, reaching 28.3 in 1913. On the other hand, the death rate declined from 23.2 in 1900 to 15.8 in 1913. The largest number of births, 2,097,838, was in 1901; the largest number of deaths, 1,310,756, in 1893, the death rate in that year being 25.8; the largest surplus of births, 910,275, in 1906. Movement of the population for three years is shown in the following table:

	1912	*1913*	*1914*
Marriages	523,491	513,283	460,608
Births*	1,925,883	1,894,598	1,874,389
Stillbirths	56,247	55,845	55,793
Illegitimate births	177,056	183,857	.....
Deaths*	1,085,996	1,060,798	† 1,108,352
Surplus of births	839,887	833,800	766,037

* Including stillbirths. † Excluding military casualties.

There has been no large German emigration in recent years. German overseas emigrants numbered 37,498 in 1895; 22,309 in 1900; 28,075 in 1905; 25,531 in 1910; 25,843 in 1913; 11,803 in 1914. Of the German overseas emigrants in 1913 and 1914, 19,124 and 9614 respectively were bound for the United States; 1306 and 580 for Canada; 140 and 77 for Brazil; 4814 and 1241 for other American countries; 359 and 232 for Australia; and 32 and 8 for Africa. Foreign overseas emigrants from German ports in 1913 numbered 413,857 and in 1914 150,416; of these, 352,251 and 131,938 were bound for the United States; 203,764 and 58,384 were Russians; 199,496 and 84,662 were Austro-Hungarians.

According to an English authority, criminality is much commoner in Germany than in England. It states that, with the German population being to the English about as 5 to 3, the crime of arson is about 4 to 1; murder, manslaughter, and other death-causing crimes, 5 to 1; unnatural offenses, 7 to 1; rape, etc., 9 to 1; incest, 13 to 1; procuring abortion, 29 to 1.

EDUCATION. Germany has a highly organized educational system which meets the practical requirements of every social class and which at the same time inculcates with unexampled thoroughness the idea that the national culture and polity are and must be paramount in human affairs. The educational system is virtually homogeneous throughout the empire, and its efficiency may be exemplified by the army recruiting statistics, which in 1913 disclosed only .04 per cent of illiterate recruits. The laws of Prussia, which provide for elementary schools, supported by local taxation, in every town and village and compel attendance at these or other schools, have been adopted, with slight modifications, in all the states of the empire. Instruction is compulsory from the age of six to fourteen.

The government maintains 11 technical high schools and 22 universities. In 1916-17, the technical high schools had an enrollment of 10,546 students, as compared with 10,824 in 1914-15. In the winter semester of 1916-17 the 22 universities had an enrollment of 60,041 students, as compared with 53,300 in 1915-16. There were enrolled 54,284 males and 5757 females; but the actual number in residence in 1916-17 was reduced, chiefly on account of the war, to 12,657 males and 5651 females.

AGRICULTURE. In 1913, arable land, including gardens, amounted to 26,059,200 hectares (about 48.2 per cent of the area of the country); meadow, 5,991,700 (11.1 per cent); pasture, 2,592,500 (4.8 per cent); vineyard, 118,600 (0.2 per cent); woodland, 14,223,200 (26.3 per cent). Areas under principal crops have been reported as follows for 1914 and 1915 respectively: wheat, 5,048,235 and 2,921,957; rye, 16,245,807 and 12,443,785; barley, 4,057,290 and 2,280,827; oats, 11,278,665 and 7,697,267; potatoes, 8,465,245 and 8,931,040; hay, 14,822,475 in 1914; sugar beets, 1,423,092 in 1914; vines, 254,880 and 242,642; hops, 68,317 and 59,342; tobacco, 35,405 and 22,537. Estimated area under sugar beets in 1916, about 1,000,000 acres; in 1917, 1,100,000 acres; estimated area under tobacco in 1916, 31,762 acres, and under hops, 44,472 acres. The table below shows for four years the estimated yield in metric tons:

	1912	*1913*	*1914*	*1915*
Wheat	4,360,624	4,655,956	3,971,995	3,885,841
Rye	11,598,289	12,322,394	10,426,718	9,152,402
Barley	3,481,974	3,673,254	3,137,983	2,483,752
Oats	8,520,183	9,713,965	9,038,185	5,986,034
Pot's.	50,209,466	54,121,146	45,569,559	53,979,258
Hay	27,681,860	29,184,994	29,156,024	24,000,000
Hops	20,564	10,617	23,236	14,563
Tobacco	38,892	38,855	28,333	....
Wine*	2,019,392	1,004,947	921,198	2,698,917

* In hectolitres.

Reports of a good potato crop in the autumn of 1917 later seemed to have been too optimistic. The oat crop was reported in November so poor that farmers would be permitted to retain only enough fodder and grain of their own raising to give each horse two pounds daily.

Live stock as reported for December 1, 1915, in Prussia, Bavaria, Saxony, and the empire:

	Prussia	*Bavaria*	*Saxony*	*Empire*
Horses*	2,444,897	279,148	117,349	3,341,627
Cattle	11,776,765	3,701,860	722,642	20,316,948
Sheep	3,505,657	455,803	56,796	5,073,478
Goats	2,096,381	330,751	142,790	3,438,296
Swine	11,803,268	1,708,304	591,129	17,287,211

* Exclusive of horses used in the army.

The number of cattle as reported for September 1, 1916, was 20,338,950; swine, 17,261,108.

The food shortage steadily continued but the policy of the food controller in the matter of rationing, etc., had the effect of making the meat supply last through the winter and even permitted the increase of the ration in March. At that time, however, the bread ration had to be reduced on account of the illegal course of the farmers who hoarded their stock and of the speculators who traded in bread cards. There were riots in Hamburg, Magdeburg, and other centres, and the discontent of the laboring classes was reported to be spreading. General von Hindenburg issued a public appeal to the loyalty of the workmen in the munitions factories. The difficulty over the food question caused some friction between South Germany and Prussia. The food controller defended the seizure of foodstuffs as a matter of absolute necessity. Chancellor Michaelis declared in July that the shortage of food had never been worse but that he hoped for relief.

COMMERCE. The German customs territory includes the grand duchy of Luxemburg. On account of the war, Germany has not published commercial statistics for any year later than 1913. It is clear, however, that the British blockade has practically annihilated the overseas trade except with the Scandinavian countries. Published returns from other countries throughout the world show that the immense German foreign commerce has declined to a negligible amount and in many cases to nothing. On the other hand, German imports of foodstuffs and certain raw materials increased from the Scandinavian countries and from the Netherlands as the war progressed, while these countries imported increasing quantities of these articles. Before the end of 1917 the greater part of this trade seemed to have been stopped by the British and American embargoes.

Imports of merchandise for consumption in 1912 were valued at 10,691,800,000 marks, and in 1913 at 10,769,700,000 marks. Exports of German produce in 1912 were valued at 8,956,800,000 marks, and in 1913 at 10,097,200,000 marks. By great classes, imports of merchandise for consumption and exports of German produce were as follows in 1912 and 1913, in millions of marks (no later figures being available than these already given in the 1916 YEAR BOOK):

	Imports		*Exports*	
	1912	*1913*	*1912*	*1913*
Raw materials ..	4,823.2	5,003.0	1,382.4	1,518.1
Partly manufactured materials.	1,256.8	1,239.0	1,012.9	1,139.4
Manufactures ...	1,410.9	1,478.8	5,763.2	6,396.3
Food substances .	2,944.9	2,759.2	789.4	1,036.0
Live animals ...	256.0	289.7	8.9	7.4
Total	10,691.8	10,769.7	8,956.8	10,097.2

Classified imports and exports shown by percentages:

	Imports			*Exports*		
	1911	*1912*	*1913*	*1911*	*1912*	*1913*
Raw materials ..	44.8	45.1	46.5	15.0	15.4	15.0
Partly manufactured materials	11.0	11.8	11.5	10.7	11.3	11.3
Manufactures ..	13.3	13.2	13.7	64.4	64.4	63.3
Food substances.	28.5	27.5	25.6	9.7	8.8	10.3
Live animals ...	2.4	2.4	2.7	0.2	0.1	0.1

Details of trade are given in the 1915 YEAR BOOK.

There was much discussion in 1917 as to Germany's commercial condition and prospects after the war. In this connection, the following portion of a leading article in the New York *Journal of Commerce* of January 10, 1918, is pertinent:

> "A good deal has been said of an 'economic league' against Germany, but such a scheme still remains a product of imagination and is unwise. The case is quite different when a study is made of the general mental attitude of the peoples of the world toward German goods.
>
> "Experience shows that national prestige and reputation are fundamental in successful foreign commerce. The disposition of different peoples to receive and trade with the representatives of foreign producers has much to do with the success of the latter. Great Britain's general equity of policy toward native races has opened wide fields for her world trade, while her free reception of the goods of competitors has had a like effect in civilized countries. The conduct of Germany during the present war, the inevitable and worldwide hatreds resulting from it, and the well founded suspicion of German standards of honesty and fair dealing that will survive for many years, must without doubt be serious obstacles in the way of German trade expansion. Too much stress need not be laid upon the fact that the mechanism of German foreign business has been destroyed—that her shipping is gone, her markets taken by others, her colonies transferred to others. It would not take long for a people as resourceful and energetic as the Germans to reëstablish themselves abroad if the way were clear. The trouble which Germany must meet is that the way is not clear, and is not likely soon to be made so: and that what blocks it is the instinctive horror and dislike of all things German that has grown up in many minds the world over. No human being can predict how or when this feeling can be eradicated, even by a complete change in German standards of conduct and diplomacy, but it is not likely to be much reduced during the generation that has shared and suffered in the present war."

SHIPPING. In 1913, there were entered at German ports 115,966 vessels, of 34,772,177 tons (registered), and cleared 117,375 vessels, of 34,921,806 tons. German shipping entered amounted to 21,231,342 tons, and cleared 21,276,587 tons; British, 6,178,714 and 6,237,567; Swedish, 2,172,577 and 2,180,898; Danish, 1,703,232 and 1,714,237; Norwegian, 1,356,681 and 1,364,783; Dutch, 1,022,585 and 1,035,008; Finnish, 207,215 and 208,419; Russian, 197,031 and 191,513. In the German shipping records a vessel is counted as entered and cleared only once for each voyage, although it may touch at several ports.

The German merchant marine on January 1, 1914, consisted of 4935 vessels, of 5,238,937 tons gross and 3,320,071 tons net, as compared with 2,903,570 tons net in 1911 and 2,469,292 tons net in 1906. These figures exclude vessels of less than 17.65 tons gross (50 cubic metres). The personnel in 1914 was 83,898, as compared with 64,037 in 1906.

It has been reported and generally supposed that the building of merchant ships in Germany has progressed on a large scale during the war. This was contradicted in an "intercepted letter" alleged to have been written at Hamburg by Albert Ballin, a leading figure in the German shipping world, under date of December 4, 1917. The letter stated that Germany was building almost no new merchant ships; that the government subsidy system to extend the merchant marine would show no results for at least five years; that Great Britain would not only be able to cripple effectually German sea trade after the war, but would be in a position to cut off Germany's supply of raw materials. The letter as quoted contains the following passage in regard to the obstacle presented to German trade by the hostile sentiment in foreign countries:

> "We look forward to resuming our sea trade. We build our proudest expectations on this. How are we to resume it in face of an Anglo-Saxondum which loathes and must loathe our presence among them? Do our fools of Chauvinists realize that we have hardly a port at which our ships can call and where a friendly welcome will be extended to them. Dover, Falmouth and Southampton, Gibraltar, Malta, and Alexandria, Aden, the Persian Gulf, Bombay and Colombo, Singapore and Hong Kong—what are

they? Great British arsenals, naval bases, coaling stations, repairing docks, in which we dare not show our faces if Britain so wills. It is the same around the African continent, the same in the West Indies and in the Pacific. We have not a coaling station of our own, not a place where we can effect repairs."

COMMUNICATIONS. The total length of railway reported as in operation March 31, 1915, was 64,195 kilometres (39,889 miles), of which 59,518 kilometres were state railway and 4677 kilometres private railway, and 61,977 kilometres normal gauge and 2218 kilometres narrow gauge.

The budget of the Prussian state railways for the financial year 1917-18 provided for extraordinary expenditures. In addition to the appropriation of 105,000,000 marks ($25,-200,000) for locomotives and rolling stock and 151,000,000 marks ($36,240,000) for new works and renewals, etc., over 312,500,000 marks ($75,000,000) were to be spent under the provisions of the "Railway Loan Law." Of this sum, 259,000,000 marks ($61,160,000) were to be devoted to locomotives and rolling stock and 15,250,000 marks ($3,660,000) to new lines; 10,500,000 marks ($2,520,000) were to be spent on double track, 5,000,000 marks ($1,200,000) on electric or narrow gauge railways and something under 23,000,000 marks ($5,520,000) on miscellaneous works. The budget also estimated an increase of 225,000,000 marks ($54,000,000) in freight receipts and a decrease of 52,000,000 marks ($12,480,000) in passenger traffic. These figures were not to be taken at their face value in view of the extent to which the German railway receipts were nominally increased by payments for military traffic, which merely represented sums handed over or credited by one government department to another.

On August 1, an additional charge of 7 per cent on the cost of transporting of freight was imposed by the German railways, the charge to be paid by the shippers. Likewise surtaxes were introduced on passenger tickets, varying from 16 per cent on a first-class ticket to 10 per cent on a fourth-class ticket, with an extra charge for baggage of 12 per cent. These measures were taken both to increase the revenue and also to save the railway facilities as from July 1, 1917, it was made compulsory to send certain classes of freight by water, whenever possible. In certain cases, increased taxes were not levied on freight sent by water. A regular service of cargo steamers running between Altona and a number of other places including Berlin, and between Berlin and other cities was maintained, and it was forbidden to send certain classes of freight by rail from particular places on the Elbe, Oder, and other rivers. In a special article on German railway operations in occupied territory, the London *Daily Mail* stated that at the beginning of September 4000 locomotives and 155,000 cars were employed in Belgium, Serbia, Rumania, and Courland.

Notwithstanding the many discussions provoked by the European War regarding the ulterior aims for a Pan-Germanic empire, that would occupy a large portion of the continent of Europe, and extend even into Asia Minor, it is difficult for most Americans to realize the extent of the thought that has been expended on the development of plans in this direction. Americans are apt to delude themselves that the North American continent is the only one where schemes of transcontinental railways, such as those of Canada and the United States, have figured. On second thought, they may recall the trans-Siberian railway or the Cape-to-Cairo in Africa, or even the line crossing the Andes in South America. Therefore, it may come somewhat as a matter of surprise, that, in connection with the German plans for the extension of their empire and influence to the Persian Gulf, there has been developed a scheme of transcontinental railways which involved, not only the connection of existing lines in Europe and Asia Minor into virtually one operating system, but also the construction of some 9800 kilometres (6090 miles) of new line. In this development, which is described from German sources in a recent issue of *Engineering* (London), and which was prepared with great detail and with the customary thoroughness, every phase of the matter—political, economic, and engineering—was considered. Indeed it was one of those schemes of empire which takes a long look into the future, and with the assurance of the support of the Imperial government, the various coöperative interests concerned were being prepared for a project which might involve the averaging of dividends over a number of years with scant, if any, return at first. The scheme was developed with the belief that Germany would be successful in the war, and thus would be able to enforce not only the coöperation of her allies, but the subjugated states traversed by the proposed system, and the tributary countries. These states, of course, would be compellled to raise a certain amount of money to carry on the scheme, whether they desired to do so or not, but obviously, aside from political considerations and obedience to German demands, the commercial developments that naturally would follow such railway construction and developments would, of course, provide an additional consideration. This scheme, it might be said in passing, was developed prior to the occupation of Bagdad by the British, and the success of their campaign in Mesopotamia. Accordingly, such developments may have brought changes in the scheme as originally matured, but until Germany is forced to forego all idea of world dominion, it will most likely remain a leading consideration.

One of the early and very obvious lessons of the war was the importance of interior communication by complete railway systems, and the Germans very properly reasoned that, if this had worked so successfully with a single country, enabling them to transfer forces from the western to the eastern frontier, or vice versa, it would be an even greater advantage when military considerations demanded the transfer of military forces from one continent to another. Furthermore, it was apparent that Germany, supplied with such effective interior railway lines, would have a great advantage over Great Britain and France, where the only means of communication would be exterior and involved, in large part, water communication.

A glance at the map of Europe and Asia will show that between Germany and Persia, there are four kingdoms, which are either in alliance with, or under the subjugation of, the predominant influence in Berlin. Austria-Hungary, Serbia, Bulgaria, and Turkey, with near by Rumania, are the countries through which this great German transcontinental line would pass;

and the strategic importance in time of war would be so apparent, that they would either willingly coöperate in its construction and maintenance, or might be compelled to do so by force. Such a line would effectively divide the forces of western Europe, and at the same time, would enable the Central European Powers to be abundantly provided with food and raw materials. On the other hand, in times of peace it would afford an important market for German manufactures and other products, and at the same time bring to that empire raw materials. Germany has, in Asia Minor, a great potential market whose resources never have been adequately exploited on account of the governmental conditions, and the government and individual policies of the Turks, but Turkey, under German guidance, would be entirely different from its condition under the somewhat easy government of the sultan, and, while territory might not actually be appropriated, yet it is very probable that, where German markets could not be established readily, some form of compulsion would be exercised.

The scheme of a Pan-Germanic railway has been prepared in the largest possible way, for it is realized that only when developed as a whole, will an adequate reward ensue. Neither local traffic alone, or transcontinental business exclusively, would warrant such a scheme, but both together and, with a system operated with a view to the greatest economy in maintenance, and working under a single central management. The greater part of the construction would be outside of Germany and Austria, as these two countries are well supplied with railways, useful both on the side of strategy and for commerce.

The programme for the construction of the new system was divided into four stages, with a certain amount of new construction or extension scheduled to take place each stage. In the aggregate new lines to be built or existing lines to be extended are shown in the accompanying table:

	1st Stage km.	*2nd Stage km.*	*3rd Stage km.*	*4th Stage km.*	*Total km.*
Hungary	1.413	673	64	350	2.500
Bulgaria	1,057	240	153	350	1,800
Rumania	606	371	...	23	1,000
Turkey	1,775	1,750	600	375	4,500
Total........	...	...	...	...	9,800

The first stage was to be completed in the course of three years, involving certain extensions of the present main line to the east from Berlin to Aleppo. This would require a double track from Oderberg, in Silicia, where Germany, Russia, and Austria join; via Temesvar, Hungary; Bazias, on the Danube, forty miles east of Belgrade; Pirot; Sofia the capital of Bulgaria; Constantinople; Eskischehir, 100 miles southeast of Constantinople; Angora; Marasch; and on to Aleppo. This stage also involved strengthening the permanent way from Bukarest; northward via Kronstadt in Hungary; to Szvonok west of Budapest, in the valley of the Theiss; over Orsova near the Iron Gates on the Danube, and Czegléd, south of Budapest; and over Rustschuk to Tirnova-Sljemen.

In Asia Minor the main feature would be connecting lines from Lefke, ninety miles southwest of Constantinople; via Brussa, to Balikesri; from Akshehr to Egerdir; and from Boli to Eregli, in connection with the coal fields of Heraklea.

The Danube would be crossed at Bazias by means of a railway bridge, and ferries would be provided at Rustschuk in Rumania, and also at the Bosphorus.

The second building stage, which was calculated for six years, involved a double track on the Bukarest-Orsova-Temesvar and Pirot-Temesvar-Kisterema sections, while in Asiatic Turkey, a new line would run from Boli to Erzerum, 120 miles south of Batoum on the Black Sea, with branches to Ineboli, Amasia, Sivas, Trebizond, and Charput.

The third stage, which would be completed within nine years, would comprise a new line from Erzerum via Bitlis to Mosul where it would connect with the Bagdad railway, while the fourth stage would involve a double track on the section Pirot-Belgrade-Budapest. and some additional auxiliary sections in Asiatic Turkey.

Referring this outline to the map, it is at once apparent that a strategic railway system of high efficiency is thus planned, and that Turkey in addition is provided with lines extending to all the frontiers of Asia Minor, as well as traversing its central districts. Furthermore, these and branch lines would develop regions rich in minerals, which would supply an invaluable trade with central Europe, either in times of peace or of war. There are two aspects to the matter, namely, the question of local transportation and traffic, to be dealt with by the separate countries, and a central or comprehensive organization that would operate the entire system on a scheme quite new to European railway operation. There would be heavy freight trains with large cars built somewhat according to the latest American practice, and sleeping-cars operated in trains-de-luxe, that would make the 3100 mile trip from Berlin to Bagdad in between eight to ten days, with every possible comfort and such reasonable tariffs, as would lead to the development of through traffic.

With a good and adequate outlet for its produce along this railway, Turkey would increase its trade with the Central European Powers, at the expense of the commerce of the Entente Allies and with greater economy, due to the substitution of rail for oversea transportation.

The estimated outlay for construction is contained in the following table:

First Stage:	
For Central Europe—	*Marks*
690 km. new lines in Bulgaria.....	122,000,000
60 km. improved lines in Bulgaria..	4,000,000
324 km. improved lines in Hungary	20,000,000
For Rumania—	
257 km. improved lines in Bulgaria.	15,000,000
50 km. new lines in Bulgaria......	9,000,000
1089 km. improved lines in Hungary	76,000,000
240 km. new lines in Rumania.....	53,000,000
366 km. improved lines in Rumania	22,000,000
For Asiatic Turkey—	
1475 km. new lines in Asia Minor..	232,000,000
360 km. new lines in Europe......	40,000,000
For Train Ferries—	
Across the Danube at Rustschuk...	4,000,000
Across the Bosphorus............	5,000,000
	602,000,000

Second Stage:	Marks
For Central Europe and Rumania—	
240 km. second set of lines in Bulgaria	43,000,000
673 km. second set of lines in Hungary	121,000,000
371 km. second set of lines in Rumania	67,000,000
For Asiatic Turkey—	
1750 km. new lines in Asia Minor	350,000,000
	581,000,000
Third Stage:	
64 km. new lines in Hungary	12,000,000
153 km. new lines in Bulgaria	28,000,000
600 km. new lines in Asia Minor	120,000,000
	160,000,000
Fourth Stage:	
350 km. second set of lines in Bulgaria	63,000,000
350 km. second set of lines in Hungary	63,000,000
23 km. new lines in Rumania	4,000,000
375 km. new lines in Asia Minor	68,000,000
	198,000,000

There seems to be no question in the minds of the promoters of this enterprise that the territory traversed will supply adequate freight business for the system, and that the annual turnover will be vastly exceeded, once the regular channels of commerce are established; but, as stated above, this will be possible only if the system is operated under modern conditions of high capacity loading and high efficiency. Thus freight cars with a capacity of from thirty-three to fifty tons must be used, and locomotives with a hauling capacity of 1000 ton gross load, an average haul of 2000 km. for all goods, and a train of 600 tons; an annual locomotive mileage of 30,000 km. and for the freight cars 15,000 km.

The outlay for rolling-stock required for the completion of the first stage would be:—

	Marks
20,700 goods wagons, at 9000 marks each	186,300,000
430 engines at 100,000 marks each	43,000,000
	229,300,000
After the completion of the Second Stage:	
0300 goods wagons, at 9000 marks each	83,700,000
200 engines at 100,000 marks each	20,000,000
	103,700,000
After the completion of the Third Stage:	
22,500 goods wagons, at 9000 marks each	202,500,000
490 engines, at 100,000 marks each	49,000,000
	251,500,000
After the completion of the Fourth Stage:	
3500 goods wagons, at 9000 marks each	31,500,000
80 engines, at 100,000 marks each	8,000,000
	39,500,000

Not only were the questions of construction for the line worked out, but even the tariffs, which were adjusted to suit that of the German Levant Line before the war. These varied from 30 marks to 32.50 marks per ton from Germany to a port in the Balkans or Asia Minor, with correspondingly decreased rates for lesser hauls in Europe, and special tariffs for carload rates for various journeys.

With limited financial resources in many of these states, which have been overrun with war, it would be manifestly impossible to supply all the capital required for such an enormous undertaking; and it was proposed that, while the respective states should construct the line, a Central European goods traffic company should be formed to provide the rolling-stock and operate the system. It might be possible to form a special Turkish freight company for the extension of the Turkish railway system, and to systematically develop the traffic throughout Europe and Asiatic Turkey. The proposed scheme involved Central European and Turkish traffic companies, with a capital stock of 343,000,000 marks which would pay a 5 per cent dividend, while the state lines would provide for the loan of 1,183,000,000 marks in the form of bonds which would pay 4 per cent interest with a sinking fund of 1 per cent per annum. These figures were expected to apply to eight years of the scheme after the completion of the first and second building stages.

Such is an outline of the very complete and systematic plan looking toward world empire, and unquestionably one that would have to be reckoned with in event of the triumph of the German armies, with all the many consequences, military, political, and economic, that would follow. While America may not be directly concerned with commercial transformation in eastern Europe and Asia Minor, yet through its alliance it is in a position to appreciate the effects of any transfer of political and commercial power.

Telegraphs in 1913: lines, 238,493 kilometres (143,192 miles); wire, 765,327 kilometres; offices, 50,013. Places having telephonic communications, 41,087. Post offices, 41,415.

FINANCE. The legal standard of value is gold. The monetary unit is the mark. The par value of the mark is 23.821 cents. On account of the enormous loans contracted by the government and issues of paper money, the mark has greatly depreciated during the course of the war. For the fiscal year ending March 31, 1918, the estimated ordinary revenue and expenditure of the empire balanced at 4,941,876,060 marks; extraordinary revenue and expenditure 85,929,228 and 93,204,992 marks respectively; total, 5,027,805,288 and 5,035,081,052. These estimates are exclusive of war credits and of expenditure on army and navy; but the estimated expenditure includes imperial debt charges, placed at 3,566,793,842 marks.

The total funded debt on October 1, 1916, amounted to 50,772,730,000 marks; treasury bills amounted to 13,779,660,000 marks, of which 10,339,200,000 marks were non-interest-bearing.

According to a booklet compiled by the Mechanics and Metals National Bank of New York, Germany's direct war expenses from August 1, 1914, to December 31, 1917, were $23,750,000,000. Similar expenses of Austria-Hungary, Turkey, and Bulgaria were $16,400,000,000, making for the Central Powers a total of $40,150,000,000. The total for the Entente Allies was $81,660,000,000, apportioned as follows: Great Britain, $26,250,000,000; France, $19,600,000,000; Russia, $17,700,000,000; United States, $6,700,000,000; Italy, $5,850,000,000; Belgium, Serbia, Rumania, and Portugal, $5,500,000,000. At the end of 1917, the average daily net war cost to Germany was about $27,200,000, and the average daily gross war cost about $30,000,000. The daily net expenses of all the Allies at the end of 1917 were placed at $115,600,000, as compared with $43,200,000 for the Central Powers. The disparity is explained by the different conditions under which the opposing groups were fighting, by the need of the Allies to spend large sums in keeping their navies and mercantile fleets at sea, by the different systems of pay in the armies, and by cost of manufacture and transportation.

At the end of 1917, the daily per capita war cost in Germany was about 44 cents, as compared with a daily normal per capita income of 44 cents. Similar figures for the other great nations engaged in the war: Austria-Hungary, 21 and 26; Great Britain, 74 and 70; France, 50 and 51; Russia, 10 and 11; Italy, 22 and 32; United States, 28 and $1.05.

Sir Edward Holden, managing director of the London City and Midland Bank, stated that in July, 1914, Germany's ratio of gold to notes was 72 per cent and the ratio of cash to liabilities 63 per cent, while in December, 1917, the ratios had been reduced to 21 and 20 per cent respectively. The total issues of German paper money, he said, amounted to £144,000,000 in December, 1913, £335,000,000 in December, 1914, and £984,000,000 in December, 1917. He stated that war loans amounted to £3,647,000,000 and the floating debt to £1,450,000,000, the total being £5,100,000,000, against £4,900,000,000 for Great Britain. See FINANCIAL REVIEW.

ARMY AND NAVY. The statistics for the army and navy were of course lacking. See the article WAR OF THE NATIONS.

GOVERNMENT. The German Empire is a federation of states under a constitution bearing date of May 4, 1871, and amended March 10, 1888. The dominating and largest state is Prussia (q.v.). The imperial constitution vests the executive authority in the King of Prussia as German emperor; he is authorized to conclude treaties, to declare war (if defensive) and peace, and to appoint and receive diplomatic representatives. In 1917, the German Emperor was William II, who was born January 27, 1859, and succeeded his father (Emperor Frederick III) June 15, 1888. The crown prince of Prussia and imperial heir-apparent is Prince Frederick William, born May 6, 1882.

The imperial legislature consists of the Bundesrat (federal council) and the Reichstag. Members of the Bundesrat (61 in number) represent the constituent states and are appointed for each session by their respective governments. Members of the Reichstag (397 in number) represent the German nation and are elected for five years by direct manhood suffrage. Prussia is represented by 17 members in the Bundesrat and 236 members in the Reichstag.

The imperial ministers, or secretaries of state, do not form a ministry proper (that is, one responsible to the popular branch of the legislature), but act independently of each other under the general supervision of the imperial chancellor. The chancellor, who is also president of the Bundesrat, is the highest official of the empire; he is appointed by the emperor without regard to party strength in the Reichstag, and to the emperor he is directly responsible. On July 14, 1917, Theobald von Bethmann-Hollweg, who had served as imperial chancellor from July 14, 1909, was succeeded by Georg Michaelis. Michaelis was succeeded on November 1, 1917, by Georg Count von Hertling, the Bavarian prime minister. Alfred Zimmermann, who succeeded Gottlieb von Jagow as secretary of state for foreign affairs in December, 1916, resigned July 14, 1917, and was succeeded by Richard von Kuehlmann. Karl Helfferich, who succeeded Klemens Delbrück in 1916 as secretary of state for home affairs and representative of the chancellor, resigned November 1, 1917, and was succeeded by Friedrich von Payer. The secretary of marine, Admiral Eduard von Capelle, who succeeded Grand Admiral Alfred von Tirpitz March 16, 1916, resigned in October, 1917, but the resignation was not accepted. Other secretaries of state: Treasury, Siegfried Count von Roedern, who succeeded Karl Helfferich in 1916; colonies, Wilhelm Solf, from December 20, 1911; justice, von Krause; posts and telegraphs, Rüdlin. The Prussian war ministry is in effect the war ministry for the empire; Prussian minister of war, Lieut. Gen. von Stein, appointed October 23, 1916.

HISTORY

MOVEMENT FOR CONSTITUTIONAL REFORM. In the spring the chancellor's position was very difficult. On the one hand were the extreme Conservatives and National Liberals, who demanded extensive annexations, and on the other hand the Socialists and moderates, who wanted peace by compromise and without conquests. The events in Russia which had come to the knowledge of the German government before the people knew of them, led the chancellor to promise immediately the electoral reforms for Prussia (March 14). The announcement caused great surprise until news of the Russian revolution reached the country. In the course of his speech on that occasion the chancellor said that one would have to be blind to the signs of the times if he thought that after this war the internal political life could go on as before. It was senseless, he said, to believe that you could put the new wine into the old bottles. After the announcement of the reforms, a Socialist deputy declared that a republic in Germany was inevitable. There followed a strong movement in parliament for constitutional reform, especially as to the membership of the Reichstag and its relation to the government. A National Liberal resolution providing for a committee of twenty-eight to consider such reforms passed the Reichstag by 227 to 33 on March 30; also a subsequent resolution offered by the Socialists, which referred to this committee all constitutional questions. A sharp debate took place on March 31, resulting in the proroguing of parliament to April 24. In the course of it the Socialists demanded that the Reichstag should have larger powers in foreign affairs. In the meanwhile the emperor intervened, saying in a manifesto published April 7, that a far-reaching change of the constitution would be introduced, but must be postponed until after the war. The committee on constitutional changes continued its work after parliament met, but no definite result had taken place when it adjourned again on May 17 for seven weeks. The changes that were considered pertained to the enlargement of parliament's powers and to reform of the representation. Though nothing of a progressive nature was accomplished by the Reichstag, two liberal measures were adopted by the Bundesrat, viz., the repeal of the Jesuit act, which for many years had prevented the Jesuits from having any legal status in Germany, and the repeal of the law forbidding the use of any other language than German at public meetings, which had been passed to prevent agitation among the Poles.

GERMANY AND THE RUSSIAN REVOLUTION. The German attitude toward the Russian revolution was set forth in a speech by the German Chancellor, Herr von Bethmann Hollweg, reported on March 29. He said that the policy of the Czar Nicholas had grown more and more hostile to Germany, inclining toward the Allies before the war and toward the Pan-Slavists. Finally it had surrendered completely to the war party and in July, 1914, the czar had refused to listen to the appeal of the German Emperor. As to the report that the German government had always aided the autocratic suppression of liberty in Russia it was entirely contrary to the facts. In 1905 it was the German Emperor that advised the czar no longer to oppose the legitimate wishes of the nation for reforms. If Russia had fixed her attention upon internal reforms there would have been no room for the restless policy of expansion which had brought on the war. As to Germany's policy toward Russia it would follow the same principle as before; that is to say, non-interference with the internal problems of other countries. He said that the malicious report that Germany wished to destroy the newly won freedom of the Russian people was utterly false. The one thing that was to be hoped was that Russian conditions would take such a form as would make her in future a stronghold of peace. Germany had suffered enough from the crimes of old Russia which had instigated the military attack of Serbia on Austria-Hungary, which had mobilized against Germany in 1914, and which was the first to reject Germany's peace offer in December, 1916. The Russian people need have no anxiety that Germany would interfere with them.

THE STOCKHOLM CONFERENCE. The manifesto of the Social Democracy which was issued at the Stockholm Conference naturally brought out wide differences of opinion in Germany. The Pan-Germans in accordance with their policy attacked it sharply. The National Liberals held a meeting soon after the manifesto appeared and unanimously voted a resolution which reaffirmed the purposes of the war as they had been defined by them in May, 1915, when they declared that Germany must annex on the west such territory as was necessary to guarantee and strengthen her power both on land and sea; and that on the east she must not only acquire better strategic frontiers but new territory to colonize. In short there must be a chance for German development over-seas in accordance with the interest of her people in the world's commerce. The business interests were strongly represented in the Pan-German party, which comprised many of the most prominent capitalists in the country. There were, however, important groups of persons who were opposed to the Pan-German policy. Some of them were disappointed in the results of the submarine warfare, others were affected by the monetary crisis which lowered the rate of exchange against Germany.

The German and Austrian peace terms in the Stockholm Conference were regarded by the Allies as the work of the German Chancellor. They were not such peace terms as could be avowed in the German parliament. The chancellor, about the middle of May, had refused to commit the government to the principles of no annexations and no indemnities, to which of course the Pan-Germans of the Prussian official class were bitterly opposed. It was argued that the German government was not sincere in promoting a peace movement on this basis, but that it did so in order to win over the Russian Socialists who were aiming at peace as soon as possible in order to benefit from the revolution in their own country. Hence it seemed to be the policy of the Germans to conciliate Russian opinion in order to induce the Russians to concern themselves with their internal affairs and stop fighting. It was said that the Germans hoped that in that case civil war in Russia might result. It was argued by the Allies that these were the real motives behind the German attitude toward the conference of Stockholm and it was pointed out that the German Socialist proposals really did not involve the surrender of Germany's military and economic advantage. They demanded an independent Finland and an independent Poland, but these were to be taken out of Russia's territory. Austria was to retain Galicia, and nothing was said about joining Posen or the Poles of West Prussia to the new Polish kingdom. Turkey was to get back Armenia and Mesopotamia; Austria to retain Bukowina and Transylvania; and Germany was to regain her lost colonies. Thus Germany would retain even on this basis as much as she could reasonably hope to get out of the war, namely, the eastern frontier against Russia made secure by the buffer state of Poland; complete political and economic control over Austria-Hungary, Bulgaria, Greece. and Turkey; in short, the establishment of that middle European empire of which she had dreamed. It was pointed out that peace on such terms would really mean a greater advance for Germany than after the victories of 1866 and 1871. Finally, if Germany were not beaten the government would not consent even to these terms. Whereas, if Germany were beaten, such terms as these would, from the point of view of the Allies, be wholly inadequate.

THE CRISIS OF JULY. Debates in the Reichstag in the first week in July revealed a strong opposition to the government. The well-known orator of the Centre, Matthias Erzburger, made a speech which, though not published, as the meetings of the committee in which it was delivered were secret, was known from the reports which leaked out to have been a very serious criticism of the whole conduct of the war. The ruling classes that had directed German policies in the war had confidently predicted that the submarine warfare would reduce England to powerlessness by the beginning of August. Among those who had insisted on this were such leaders as von Tirpitz and Reventlow, and along with them were all the generals, the jingo element, and the whole Pan-German group. In his speech Erzburger declared their figures wrong, and their predictions false, and that instead of bringing England to her knees, they had brought the American continent into the war. The speech created something like a panic inside parliament and without and had the effect of uniting the three great parties of the Socialists, Catholics, and the Radicals, against the government. On July 10 the chancellor announced in committee that he would not reveal the conditions of peace, but that the formula of peace without annexations was not acceptable. He soon found himself unable to control the situation. His attempts to compromise the two parties into which the whole nation was divided, the military party and the moderates, failed completely. His former adherents fell away from all sides. Then followed a period of conferences and rumors indicating a serious political crisis. The Centre decided to support Erzburger's attitude. The purpose of this policy, according to its advocates, was to show to the Allies by getting a definite declaration on the subject of German aims in the war that the Prussian military caste was not the controlling factor and that the Allies were really making war upon the entire German people. Many Germans believed that the introduction of a more democratic government would place them in a better situation before the world and defeat the arguments of the Allies that the war on their part was for democracy against despotism. Despite the emperor's promise of reforms in Prussia nothing definite had been done. The chancellor was attacked both by the parties who wanted reform and those who did not; by the Pan-Germans on the one hand and by those who favored a peace without annexations on the other; and finally by those who believed that the submarine warfare was a failure and that it had injured Germany's chances by bringing the United States into the war. On July 12 it was announced that two members of the cabinet had given up their portfolios and that a Socialist would be admitted to the ministry in charge of a new department of labor. In the press of the Allies there was a tendency to explain these developments as signs of an approaching revolution. On the other hand it was pointed out that even if the points demanded by the Clericals and extreme Socialists, namely peace without annexations, no indemnities, and a programme of internal reforms, were conceded by the government it would not mean that Germany would meet the demands of the Allies, for peace without annexations was generally interpreted as a return to the status quo before the war and the internal reforms were not likely to go so far as to displace the ruling classes. As to peace without annexations, a prominent Socialist explained it as practically meaning German control of middle Europe from the North Sea to the Persian Gulf and the restoration to her of all her African colonies. He argued that this arrangement would leave her much stronger than before and would break England's exclusive power on the seas. An interesting interpretation of the movement for internal reforms was given out by Professor Hans Delbrueck on July 10. He said that in the main the Conservative party was opposed to the measure and that he believed they would prevent their adoption till after the close of the war. He himself and others of the Conservatives whom he characterized as "enlightened" united with the middle parties in a demand for immediate reform. Success, however, seemed doubtful. England, Belgium, and Italy, he said, have not a general and direct suffrage even now, so if Prussia took the step of universal suffrage, it would be in advance of those countries. Opposed to this reform were the strongest elements in the country and these reactionaries were strengthened by the policy of the United States and Great Britain in declaring that peace could come only when Germany was democratized. The progressive classes in Germany were naturally angered by this interference of foreign governments with their internal affairs and many of them turned against their own programme rather than carry it out under dictation. It was the opinion of Professor Delbrueck that the surest way of securing the reform would be to divorce it altogether from Germany's foreign policy. He believed that the situation in Germany had been simplified by the Russian revolution. Down to that time Germany had believed herself menaced by the Russian army, which was almost twice the size of the armies of Germany and Austria-Hungary combined. By the defeat of Russia and the bringing on of a revolution which gave liberty to Russia, Germany had in a sense freed herself. There was less danger from a democratic Russia than from Czarism and Germany could now reduce her armament.

On July 11, the emperor as King of Prussia signed a rescript promising the reform of the Prussian three-class system for the next election, which would therefore be on the basis of equal suffrage. On this occasion the journal of Maximilian Harden, celebrated for its outspoken criticism of the government, was suppressed. The opposition to the chancellor, however, had gathered such strength that he was forced to resign (July 14). He was succeeded by Dr. Georg Michaelis, the Prussian food controller, who had previously been under-secretary of finance. It was said that the new chancellor's programme would be unity on internal questions; confidence and solidarity in foreign policy; and the maintenance of the tried policy of the alliances. The Kaiser published a farewell message to the retiring chancellor in which he praised him for his services and expressed his regret for his resignation. According to the comments in the press, which were very severe, the return of von Bethmann to power was out of the question. The new chancellor was described as a man of strong character of the strictly bureaucratic type. As commissary for food supplies in Prussia he had introduced strict measures and had employed soldiers throughout the country as inspectors to pass from house to house in order to discover hidden stores of food. This measure had resulted in only a small increase in the supply and made him many enemies.

THE RESOLUTION OF JULY 19. On July 19 the Centre, Progressives (or Radicals), and Socialists carried by a majority of about 100 a resolution that marked an important stage in the political situation and was much discussed throughout the year. This rejected the policy of "forced annexations" and any policy of political, economic, or financial oppression after the war, and set forth as the object of the conflict the liberty, independence, and integrity of the German Empire. The Conservatives and National Liberals voted against it. Thus the majority in parliament committed itself against the plans of the Pan-Germans. It was taken among the Entente Allies as a sign that the Germans were beginning to take a more moderate view of the situation and to inquire into the reason of the hatred of them which was so manifest in neutral as well as hostile countries. It started a flood of criticism of the government in influential quarters in Germany, where it was asked why America had been brought into the war and why German diplomatic policy should lead to such affairs as those of the Zimmermann note in Mexico and the Luxburg revelations in Argentina (see THE UNITED STATES AND THE WAR). The vote was further significant as indicating a tendency on the part of parliament to assume control and as a step towards the establishment of ministerial responsibility. Then came, as noted above, the appointment of Dr. Michaelis, who was comparatively unknown and who had not taken part in either parliamentary affairs or foreign politics. He was thought to have been chosen by the emperor because there was nothing known against him. The first problem of the new chancellor was how to come to an arrangement with parliament over the July resolution. In this matter he compromised and shifted and though professing to accept it, he introduced so many conditions and explanations that it was clear that he meant to keep it or leave it as he saw fit. The main points in his speech were as follows: That Germany would not continue fighting a day longer merely for conquests, "if she could obtain an honorable peace"; that the German peace would be the peace of a country that had successfully carried out its purpose; that German territory was inviolable and that the peace must be one that would secure the frontiers of the empire, that peace must be made on a "give and take" basis; further, that Germany must have guarantees for the existence of both its continental and its colonial empire; that there must not be any economic offensive alliances against Germany after the war; and that finally it was the turn of the Allies to offer peace now, Germany having done her part already. He said also that he was ready to accept the Reichstag's peace resolution of July 19, "as he understood it." In the direction of foreign affairs Dr. Michaelis soon seemed to be overshadowed by the new secretary of state, Herr von Kühlmann, who was prominent in Germany and well known abroad as a skillful diplomat. The policy followed by Kühlmann had for its object to sow distrust among the Entente Allies. After the vote on the peace question parliament passed the war credit of 15,000,000,000 marks and adjourned to October.

THE CRISIS OF OCTOBER. When parliament met again in October a new crisis arose on account of the campaign carried on not only in the country but in the army and navy for what was called a German peace. The Socialists endeavored to show that this campaign, while pretending to stimulate the patriotism of the troops, really was turned into an attack upon parliament. They accused these propagandists of fostering in the army with the approval of the higher military authorities a contemptuous attitude towards the civil government. The ministry was interpellated on this point, and the answer was given by the minister of war, von Stein, who, however, won no confidence by his reply, in which he simply refused to take the affair seriously. The vice-chancellor, Helfferich, was equally unsuccessful. The parliament then took the serious course of referring the new vote of 300,000,000 marks for war supplies back to the committee as an expression of its resentment that the Chancellor himself had not been present at this discussion. A few days later the Chancellor did address the committee and Helfferich made an apology, but the government soon fell into a still more serious error. The Socialist deputy, Herr Dittman, having accused the government of unfairly treating the sailors, and referred to a disorder which had taken place in the navy, was answered by Admiral von Capelle, secretary for the Marine to this effect: The Russian revolution had turned the heads of a few people in the fleet and a plan was formed by them to choose leaders who would stir up a spirit of disobedience among the men. He then added that documents had proven that the chief agitators had made the plans known in the parliament building in the rooms of the Independent Socialist party to deputies Dittman, Haase, Vogtherr, who had approved these plans. This provoked sharp criticism from all parties except the extreme Right, as an attempt to discredit these members, who had not been present at the court-martial whose evidence was cited by the admiral and had not been brought to trial as they should have been if the charges were genuine. The Reichstag passed the war estimates and was at once prorogued, but the position of the chancellor was hopelessly compromised. During the last week in October, Dr. Michaelis resigned and Count von Hertling, former president of the council of Bavaria, was appointed. Before assuming office he resorted to the unprecedented measure of conferring with the party leaders. For several days these interviews continued and though at one time he seemed to have failed he finally came to a satisfactory arrangement and accepted the chancellorship. This was taken as a sign of the approach to a parliamentary form of government. Von Hertling was seventy-four years old, an ultramontane Catholic, and a former supporter of von Bethmann-Hollweg. His record seemed to mark him out as a decided conservative and his atttitude toward the war, to judge from certain public declarations, was not conciliating. When the note from the Pope was under discussion and the question of Belgium in particular came up he had said that the moment had not yet come to make known the intentions of Germany in regard to Belgium; but that in any case Germany would see to it that she received the necessary political and economic guarantees that should put her beyond danger of the hostility of Belgium in the future. As to Alsace-Lorraine, he favored the proposal which had been discussed in the spring for the division of the provinces between the states of the empire, Alsace to go to Bavaria and Lorraine to Prussia. He had declared that nothing should be done in Germany to change the federal character of the empire and that all efforts to centralize and unify Germany were doomed to failure. On the other hand there were incidents in the career of Von Hertling which pointed in the opposite direction and which made him distasteful to the Pan-Germans. For example, he had acted as mediator between Count Czernin and the German government on the question of peace. The comment in the newspapers was divided on the subject. Some reproached him with his Clerical and Conservative origin; others (especially Socialists) with his desire to divide Alsace-Lorraine. Von Hertling's programme included the acceptance of the Reichstag's demand for the immediate carrying out of the Prussian electoral reforms, for the abolition or relaxation of the political censorship and the state of siege, and for a foreign policy along the lines of the Pope's message.

PRUSSIAN ELECTORAL REFORM. In February a bill passed the Landtag giving the municipal vote to the soldiers at the front. As noted above the emperor on April 7 had made a vague promise of reform, but on July 11 had instructed the ministry to bring in a bill before the next elections revising the Prussian system on the basis of equal franchise. The government's measures were made public in December. For the lower house of the Prussian parliament the bill provided for the introduction of the equal, direct, and secret ballot, which was to be possessed by every Prussian who had been a subject for at least three years and was twenty-five years of age or more and had been one year in the district. The vote could only be cast within the district. Soldiers on duty could not vote. There was to be one deputy for every 250,000 inhabitants, with the exception of a dozen districts each of which had an additional deputy. These were in the industrial regions of the Rhine and Westphalia. Another important feature was the right of the upper house as regards the budget. Down to that time the upper house could simply accept or reject the budget as a whole without amendment, but the new measure gave it the right to discuss and amend every clause. Again the composition of the upper house was radically changed in the following manner:—10 representatives of the mediatised princely houses; 24 representatives of the princes and counts; 26 of the other hereditary nobility; 36 burgomasters; 36 representatives of the great landed property owners; 36 representatives of commerce and industry; 76 representatives of the communes; 84 representatives of the professional corporations, of which 36 were for agriculture and 36 for commerce and industry and 12 from among the artisans; 16 representatives of universities and 16 church representatives. The King of Prussia was to nominate 150 peers. The total number of the members of the upper house would then be 510. This by no means satisfied the democratic demand. The Socialists said that the more the thing was changed the more it remained the same and declared that Prussia would henceforth be governed more than ever before in an absolute manner, for in case of any conflict between the will of the people and the government, the government could, according to the constitution, take the course that it desired. To be sure it had granted equal, direct, and secret suffrage; but to offset that it had refused to admit the laboring class into the upper house. The new electoral system was not universal and the slight progress that was made was far more than offset by cutting down the rights of the lower house in the matter of the budget. In many quarters the failure of the measure was predicted, for on the one hand it did not go far enough to meet the views of the Democratic element and on the other hand it went too far for the Conservatives. The bill was under discussion in the Prussian lower house in December. It appeared that the great majority of the National Liberals were resolutely opposed to it. Their spokesman declared that they would never accept universal suffrage. Although the King of Prussia had promised it several times, especially in his Easter message and in that of July 11, they would not abandon their rights as lawmakers for respect for the king, who had been misled by von Bethmann-Hollweg in this matter, the latter aiming solely to save his office. The house must save the king from the consequences of this error of the chancellor. The masses did not understand politics. Ignorant voters would be at the mercy of demagogues. Other states would have to follow Prussia. This would be disastrous especially in Saxony, where in the last Reichstag elections over 50 per cent had voted for Socialists. It would give a Socialist majority in the Saxon Diet and the government could not get on with it. A member of the government defended it, saying it would stir up the wrath of the people if rejected. The spokesman of the Free Conservatives declared his group squarely against it. A representative of the Poles favored it. House postponed discussion.

GERMAN WAR AIMS. It was impossible even to summarize the vast amount of speculation, suggestion, and argument on the subject of the aims of Germany. The Germans themselves were divided and the gap between the Pan-Germans on the one hand and the extreme Socialists on the other was very wide. In spite of the check to the German advance during the year the ambitions of the Pan-German element seemed in no-wise diminished. Many statements were made in regard to the minimum that Germany would accept which involved German imperial rule over an extremely large portion of the earth's surface. The number of German articles on world policy was beyond calculation. In regard to the question of alliances some argued that if Russia chose England as her friend, in the long run the world policy of Germany would be confined to a very narrow sphere and the prospect of future conflict was almost certain. An ultimate coalition of Germany, Russia, and Japan was put forth by some as the only way of destroying the British Empire. Such a coalition would of course mean simply another union for the purpose of dividing up the map of the world, but it was argued that that process of opinion would be continued anyhow and that German acquiescence would not check the aggression of others. With the Russians and Japanese on one side and the Germans and German Turks on the other it was argued that English power in the Middle and Far East would be destroyed. As an illustration of this sort of speculation the following passage may be quoted from an article on ways and aims of world policy in the Cologne *Gazette:* "If we are able to overthrow the British and thus to render Russia and Japan decisive service in Asia against England we ought to be able to obtain permanent recognition of our Turkish and Near Eastern policy, and to make the western edge of the Persian mountains the frontier between the Quadruple Alliance's sphere of interest and Russia's sphere of interest.

See WAR OF THE NATIONS, *The Diplomacy of the War; Military Operations, Naval Operations; Aërial Warfare.* See also FINANCIAL REVIEW; FOOD CONTROL; NAVAL PROGRESS; PROSTITUTION; STRIKES; SUBMARINE OPERATIONS.

GIBRALTAR. A narrow peninsula extending southward from the southwest coast of Spain, commanding the entrance to the Mediterranean; a British crown colony, naval and coaling station, and entrepôt of the British trade with the Barbary States. Area, 1⅞ square miles; population, exclusive of the military, 17,943 in 1916. Practically a free port, it has no trade returns. Revenue (1913), £104,634; expenditure, £82.077; total tonnage entered 1915, 7,157,837 (4,239,536 British). The customs revenue in 1915 was £37,250. The Rock of Gibraltar (*Mons Calpe*) was captured by the British in 1704 from the Spanish kingdom of Granada, and in 1713 was formally ceded by the terms of the treaty of Utrecht.

GIFTS AND BEQUESTS. The benefactions to charitable, religious, educational, artistic, and patriotic objects in 1917 exceeded those given in any previous year. It is probable that the entire amount exceeded $1,000,000,000. In the totals given below, the contributions to war relief are only those which have been distributed through the chief agencies in the larger cities. If to these were added the direct contributions, and the immense value of supplies, the total sum would be greatly increased.

The total amount given during the year, according to the records kept by the *Chicago Tribune,* totaled $815,654,944, divided as follows: to charity, $729,124,497; to education, $39,597,797; to religious organizations, $19,707,438; to artistic associations, $21,975,710; and to libraries, $5,259,500.

The largest donations of the year were as follows: to the Red Cross, $114,000,000; Rockefeller Foundation, $103,894,409; John D. Rockefeller personal gifts, $70,000,000; war relief funds through New York City Agencies, $52,221,000; Y. M. C. A., $51,722,580; Jewish War Relief, $17,500,000.

Among the large individual donations was one of $15,000,000 from Isaac D. Fletcher willed to the Metropolitan Museum of Art in New York City. J. P. Morgan also gave $7,500,000 to the Museum. Rosaline P. Coleman, of Lebanon, Pa., left by her will $6,000,000 to charity. John D. Rockefeller, Jr., gave to various objects, $5,200,000. Andrew Carnegie's contributions during the year amounted to $3,150,000. Miss S. B. Harkness, of New York City, gave to Yale University, $3,000,000.

In the following list, sums less than $5000 are not recorded.

Abraham Lincoln Center, gift from Edward Morris family, Chicago, Ill., $207,500; other donors, $87,000.

Actors' Benefit, Chicago, Ill., $5000; will, John Hoge, Zanesville, Ohio, $500,000; various donors, Chicago, Ill., $7000.

Administration Bureau, gift from Rockefeller Foundation, $9820.

Aero Club, New York, will, Samuel H. Valentine, $10,000.

Albany Hospital, gift from George F. Baker, New York, $25,000.

Aldrich, James H., Manhattan, N. Y., will to charity, $41.500; will to church, $25,000.

Allegheny Memorial Hospital, gift from Singer heirs, Pittsburgh, Pa., $250,000.

Allentown, Pa., various donors to hospital, $50,000.

Allied War Relief, gift from Carnegie Foundation, $500,000; gift from Kidder, Peabody and Co., New York, $100,000.

Alma College, Alma, Mich., gift from Jay Clisbe, Alma., Mich., $6000.

Alms, Eleanor C., Cincinnati, Ohio, will for park purposes, $50,000.

Altoona, Pa., various donors to Y. W. C. A., $50,000.

American Ambulance Corps, gift from R. W. Goelet, New York, $250,000.

American Baptist Foreign Missions, gift from Rockefeller Foundation, $75,000.

American Bible Society, gift from unnamed donor, New York, $25,000.

American Red Cross, gift from Jacob H. Schiff, New York, $100,000.

American Unitarian Association, will, Horace Davis, Berkeley, Cal., $75,000; will, Mary A. Evans, Boston, Mass., $100,000.

Amherst College, Amherst, Mass., will, Samuel H. Valentine, New York, $5000.

Amherst, Mass., gift of library from Edward C. Conners, $250,000.

Ansbacher, Adolph B., New York, will to charity, $15,000.

Apperson, J. P., Portland, Ore., gift to Oregon Agricultural College, $25,000.

Aquarium, San Francisco, Cal., gift from Ignaz Steinheart, San Francisco, Cal., $100,000.

Archbold, John D., New York, will to Syracuse University, $500,000.

Ardmore, Pa., various donors to library, $25,000.

Armour, J. O., Chicago, Ill., Easter gift to employees, $500,000; gift to hospital, $10,000.

Army and Navy Y. M. C. A., Boston, Mass., various donors, $200,000.

Arnheim, Lanny, New York, will to charity, $8000.

Aronson, Meyer, New York, will to charity, $27,500.

Art Institute, Chicago, Ill., will, Julius Lowenthal, $5000; gift from Wallace De Wolf, $50,000.

Art Museum, St. Louis, Mo., gift from Mrs. Daniel Catlin, $200,000.

Atlanta, Ga., various donors to fire relief fund. $50,000; gift of various donors to church, $32,563; gift of various donors to hospital, $60,000.

Atwood, Annie M., New York, will to church, $12,000.

Audubon Society, New York, gift from T. C. Dupont, New York, $5000.

Autry, James L., Houston, Texas, gift to library, $5000.

Ayer and Son, N. W. Philadelphia, Pa., gift to employees, $50,000.

Babies' Hospital, Philadelphia, Pa., various donors, $121,000.

Backus, Charles De Witt, New York, will to charity, $15,000.

Baker, George F., New York, gift to Albany Hospital, $25,000.

Baker, Sarah A., Monrovia, Cal., will to Philomath College, $80,000.

Balch, Emily S., Philadelphia, Pa., will to library, $100,000

Ball, Spencer, Terre Haute, Ind., will to charity, $65,000.

Baltimore, Md., unnamed donor to Lutheran church, $25,000; various donors to church, $40,000.

Baptist Hospital, Kentucky, various donors, $142,000.

Baptist Mission, Atlanta, Ga., various donors, $5510.

Baptist Relief Fund, Atlanta, Ga., gift from P. J. Coolidge, $15,000; various donors, $107,000.

Barbour, Levi, Detroit, Mich., gift to University of Michigan, $150,000.

Barbour, William, New York, will to charity, $20,000.

Barnard College, various donors, $1,000,000.

Bauer, Jessie R., St. Louis, Mo., will to charity, $200,000.

Baylor University, gift from R. E. Burt, Houston, Tex., $10,000.

Beeker, Lucius, East St. Louis, Ill., will to charity, $12,000.

Belgian Relief, unnamed donors, New York, $300,000; various donors, Philadelphia, Pa., $40,325; gift from the Rocky Mountain Club, $500,000; unnamed donor, New York, $100,000; gift from the New York Chamber of Commerce, $10,000.

Bellefontaine, Ohio, various donors to church, $10,500.

Belleville, Ill., three donors to church, $7200.

Belmont, August, New York, gift to war relief, $10,000.

Benton, Joseph H., Boston, Mass., will to public library, $2,500,000.

Berea College, Berea, Ohio, gift from J. G. Marting and wife, $25,000; gift from A. L. Nash, $25,000.

Betz, Frank F., Chicago, Ill., gift for Working Girls' Home, $50,000.

Billings family, Chicago, Ill., gift to University of Chicago Medical School, $1,000,000.

Bingaman, C. F., Pittsburgh, Pa., gift to hospital, $150,000.

Birk, William A., Chicago, Ill., will to charity, $15,000.

Birmingham, Ala., Y. M. C. A., gift from Julius Rosenwald, $100,000.

Birmingham College, gift from L. B. Musgrave, $10,000.

Blake, Mrs. S. P., Boston, Mass., gift to Harvard University, $50,000.

Blume, Andreas, Boston, Mass., will to charity, $10,000.

Boal, Mr. and Mrs. Ayers, gift of park to Winnetka, Ill., $27,000.

Boalt, Elizabeth J., Santa Barbara, Cal., gift to University of California, $150,000.

Board of Home Missions, Chicago, Ill., gift to Chicago Missionary Society, $25,000.

Bodman, Edward C., New York, will to church, $20,000.

Bond, Mrs. Joseph, Chicago, Ill., gift to University of Chicago, $50,000.

Borgman, Martha T., Philadelphia, Pa., will to church, $21,000; will to charity, $16,000.

Boston College, will, Augusta E. Corbin, $550,000.

Boston, Mass., various donors to Jewish Charities, $10,000; various donors to charity, $12,650.

Botanical Garden, New York, gift from Daniel Guggenheim, $50,000; gift from Murry Guggenheim, $50,000.

Box, Nicholas, Mrs., Lafayette, Ind., will to charity, $150,000.

Boyle, Henry, Fond du Lac, Wis., gift to St. Norbert's College, $115,000.

Boy Scouts, Pittsburgh, Pa., drive, $50,000.

Boys' Shelter Home, Chicago, Ill., various donors, $15,000.

Brady, George M., Detroit, Mich., gift to Y. M. C. A., $10,000.

Brady, James B., New York, will to charity, $823,941.

Brandon, Julius, New York, will to charity, $6000.

Bridge, Dr. Norman, Chicago, Ill., gift to University of Chicago, Medical School, $100,000.

British Red Cross, various donors, New York, $12,000.

Brooklyn Institute of Art, will, Laura F. Hearn, New York, $16,500.

Brooks, Annah, Pasadena, Cal., will to charity, $14,000.

Brookes, Charles P., Ansonia, Tex., gift to Yale University, $500,000.

Brown, Clarence A., Chicago, Ill., will to church, $12,000.

Brown, Kate O., New York, will to New York University, $500,000.

Brown University, will, Samuel C. Eastman, Concord, N. H., $100,000.

Bryant, John C., Boston, Mass., will to charity, $50,000; will to church, $50,000; will to Kimball Union Academy, $50,000.

Bryn Mawr College, gift from Mary E. Garrett, $45,855; unnamed donor, $100,000.

Buffalo, New York, various donors to charity, $103,189.

Burt, R. E., Houston, Tex., gift to Baylor University, $10,000.

Busey, Mary E., Urbana, Ill., gift to library, $35,000.

Business Women's Christian League, Philadelphia, Pa., gift to charity, $10,000.

Butler, James G., Youngstown, Ohio, gift of art gallery to city, $250,000.

Butler, Margaret L., St. Louis, Mo., gift to charity, $15,000.

Byrne, James, New York, gift to Harvard University, $90,000.

Boyd, James M., Richmond, Va., will to charity, $25,000.

Cabot, Godfrey L., Boston, Mass., gift for war purposes, $50,000.

Calef, Ira C., Washington, Vt., gift to hospital, $600,000.

California, University of, gift from Elizabeth Boalt, Santa Barbara, Cal., $150,000; gift from Horace Davis, $10,000; gift from J. W. Hellman, San Francisco, Cal., $50,000.

Campbell, Alexander, New York, will to charity, $23,475.

Camp Fremont, various donors, San Francisco, Cal., $54,000.

Camp Grant, gift from Chicago donors, $34,344.

Canfield, Charles A., Los Angeles, Cal., will to training school for girls, $100,000.

Carnegie, Andrew, New York, gift to Carnegie Institute, $1,088,500; gift to Carnegie Technical Institute, $956,000; gift of library to Colfax, Ind., $10,000; gift of library to Crosby, Minn., $28,000; gift of library to Darlington, S. C., $10,000; gift for Detroit Library, $375,000; gift of library to Paw Paw, Mich., $10,000; gift of library to Santa Barbara, Cal., $75,000; gift of library to Worthington, Ind., $10,000.

Carnegie Corporation, gift of library to Peabody College of Teachers, $180,000.

Carnegie Foundation, Allied war relief, $500,000; gift to charity, $11,300.

Carter, S. B., Brighton, Mass., will to charity, $5000.

Caruso, Enrico, New York, gift to Italian charity, $10,000.

Case, Charles H., Chicago, Ill., will to missions, $322,650; will to Wheaton College, $322,650.

Casanas, Corinne, New Orleans, La., gift to Presbyterian Hospital, $55,000.

Catholic Order of Foresters, Chicago, Ill., gift to charity, $10,000.

Catholic University of America, gift from T. H. Shiver, Westminster, Md., $10,000.

Catlin, Mrs. Daniel, St. Louis, Mo., gift to Art Museum, $200,000.

Catlin, Mrs. J. G., St. Louis, Mo., gift to charity, $5000.

Chamberlain, Joseph P., New York, gift to Columbia University, $150,000.

Charity Bazaar, Philadelphia, Pa., $96,632.

Chastain, Joseph B., New York, will to charity, $10,000.

Chicago, Ill., various donors to charity, $5000; $10,000; various donors to church, $8000; $15,000; $50,000; various donors to Infant Welfare Society, $10,000; Tag Day for charity, $27,868; gift to Y. M. C. A., $190,000; various donors, gift to Y. M. C. A., $200,000.

Chicago Allied Bazaar, gift to Allies, $535,293.

Chicago Children's Tag Day, $59,000.

Chicago Community Trust, gift from unnamed donor, $50,000.

Chicago Elks, gift to charity, $10,000.

Chicago Missionary Society, gift from Board of Home Missions, $25,000.

Chicago School of Divinity, unnamed donor, $250,000.

Chicago, University of, gift from Mrs. Joseph Bond, $50,000; gift from Mrs. Edward Morris, $5000; gift from John D. Rockefeller, New York, $2,000,000; unnamed donor, $7500; unnamed donor, $50,000; various donors, $8650.

Children's Home, Philadelphia, Pa., will, Sarah H. Hacker, $5000.

Children's Hospital, Boston, Mass., various donors, $30,225.

Chinese Medical Schools, gift from Rockefeller Foundation, $2,600,000.

Choate, J. H., New York, will to charity, $40,000; will to church, $10,000; will to library, $10,000.

Christian Church of the United States, gift for missions, $3,000,000.

Cincinnati, Ohio, various donors to charity, $200,000; various donors to church, $5000.

Cleveland, Art Museum, will, Mary W. Harkness, Madison, N. J., $100,000.

Cline, Albert B., Bluffton, Ind., gift to college in China, $100,000.

Clinic Medical Bureau, gift from Rockefeller Foundation, $814,827.

Clisbe, Jay, Alma, Mich., gift to Alma College, $6000.

Clyde, James, Beaumont, Cal., will to church, $5000.

Colby College, various donors, $340,000.

Coleman, Rosaline P., Lebanon, Pa., will to French Charities, $6,000,000.

Collins, Mrs. H. L., Pittsburgh, Pa., gift to charity, $25,000.

Coolidge, P. J., Atlanta, Ga., gift to Baptist Relief Fund, $15,000.

Columbia, Mo., various donors to Y. M. C. A., $5000.

Columbia University, gift from Joseph Chamberlain, $150,000; will, George H. Rives, $50,000.

Columbus, Ohio, various donors to church, $100,000; various donors to Y. M. C. A., $80,000.

Congregational Pension Fund, will, Mrs. D. W. James, $1,000,000.

Conners, Edward C., gift of library to Amherst, Mass., $200,000.

Converse College, gift from General Education Board, $50,000; other donors, $100,000.

Cooper, Kate A., Chicago, Ill., will to charity, $5500.

Cope, Caroline E., Philadelphia, Pa., gift to Haverford College, $25,000.

Corbin, Augusta E., Boston, Mass., will to Boston College, $550,000; will to charity, $325,000; will to church, $255,000; will to library, $125,000; will to Wesleyan Academy, $75,000.

Cornell University, will, Oliver H. Payne, New York, $500,000.

Crawford, Sarah, Danville, Ind., will to school, $31,000.

Crimmins, John D., New York, will to charity, $37,500.

Crowden, James C., Richmond, Va., will to charity, $5600.

Crowle, Richard, New York, will to charity, $20,000.

Curley, E. J., Newbury, N. H., gift to Phillips Exeter Academy, $100,000.

Dartmouth College, gift from H. L. Moore, Minneapolis, Minn., $100,000.

Davis, Horace, Boston, Mass., will to American Unitarian Association, $75,000.

Davis, Horace, Berkeley, Cal., gift to University of California, $10,000.

Davis, M. C., Sioux City, Iowa, gift to Samaritan Hospital, $100,000.

De Wolf, Wallace, Chicago, Ill., gift to Art Institute, $50,000.

Defiance College, gift from Mr. and Mrs. H. B. Tenzer, $10,000.

Derne, John, New York, will to charity, $16,500.

Des Moines, Iowa, various donors to church, $25,000.

Dick, Harris B., New York, will to Metropolitan Art Museum, $1,098,980.

Dietz, Mr. and Mrs. C. N., Omaha, Neb., gift to Old People's Home, $10,000.

Dixie Highway, gift from Charles Fisher, Indianapolis, Ind., $5000.

Dole, Mary H., Chicago, Ill., gift to church, $7000.

Dollar, Robert, gift to San Francisco Theological Seminary, $50,000.

Dorneley, Eleanor C., Philadelphia, Pa., gift to charity, $5000.

Douglas, James J., Louisville, Ky., will to charity, $65,000.

Drury College, will, Josephine Watson, Springfield, Mass., $100,000.

Duke Brothers, New York, gift to colored men's hospital, $40,000.

Dupont, T. C., New York, gift to Audubon Society, $5000.

Dupont, P. S., Wilmington, Del., gift to hospital at West Chester, Pa., $30,000.

Durant, Pauline J., Boston, Mass., will to charity, $8000.

Eastman, Samuel C., Concord, N. H., will to Brown University, $100,000.

Egerton, Mary H., Newfield, N. Y., will to schools, $30,000.

Egleson, Thomas S., Atlanta, Ga., will to church, $25,000.

Eighteen American Colleges, gift to Students' War Fund, $361,488.

Elks, Order of, gift to charity, $1,000,000; gift to hospital and government, $200,000.

Elks Grand Lodge, gift to University of Virginia, $60,000.

Elks War Relief Association, gift to University of Oregon, $60,000.

Elmira College, New York, gift from John D. Rockefeller, $100,000; various donors, $200,000.

Emma Willard School, gift from Mrs. Russell Sage, $250,000.

Emery, Mary, Cincinnati, Ohio, gifts to medical college, $800,000.

Emory University, gift from South Georgia Methodist Conference, $15,000; various donors' gift, $2,500,000.

Enderton, Richard, Chillicothe, Ohio, gift to charity, $6000.

Episcopal Pension Fund, total donation, $8,712,000.

Epstein, Mr. and Mrs. Max, gift to University of Chicago Medical School, $100,000.

Evans, Mary, Boston, Mass., will to American Unitarian Association, $100,000; will to Hamilton Institute, $25,000; will to New England Conservatory of Music, $200,000; will to Simmons College, $100,000; will to Tuskegee Institute, $100,000.

Evanston, Ill., various donors to hospital, $140,000.

Fager, Frank, Columbus, Ohio, will to library, $10,000.

Fels, Mrs. Joseph, Philadelphia, Pa., gift to charity, $70,000.

Ferguson, Samuel, Detroit, Mich., gift to church, $95,000.

Film Industry, Los Angeles, Cal., gift to Soldiers' Christmas Fund, $7000.

Findlay College, various donors, $6000.

Fisher, Charles, Indianapolis, Ind., gift to Dixie Highway, $5000.

Fitchburg, Mass., various donors to charity, $75,000.

Fletcher, Isaac D., New York, will of art collection to Metropolitan Museum, $3,000,000; will to Metropolitan Museum, $15,000,000.

Florsheim, Simon, Chicago, Ill., will to charity, $5000.

Ford, Henry, Detroit, Mich., gift to Red Cross, $500,000.

Foster, Anna, Fostoria, Ohio, will to charity, $100,000.

Foster, Eliza, Waterville, Maine, will to charity, $10,000.

Foster, Nathan, Los Angeles, Cal., will to charity, $30,000.

Fox, Mr. and Mrs., Ogontz, Pa., gift to hospital, $5000.

Franco-Italian Relief, operatic concert, Chicago, Ill., $18,500.

Freedmen's Aid Society, gift for negro education, $500,000.

Freeman, Henry G., Philadelphia, Pa., will to charity, $12,000.

Frelinghuysen, Mr. and Mrs. P. H., Morristown, N. J., gift to hospital, $75,000.

French, Joseph E., Rockland, Mass., will to charity, $32,000.

French orphans, gift from Joseph Stillman, $200,000.

French Relief Fund, various donors, Philadelphia, Pa., $7951.

French War Fund, gift from Mrs. G. M. Pullman, $5000; various donors, $69,575.

Frick, Henry C., New York, gift to Salem, Mass., $10,000.

Frick, Mrs. H. C., New York, gift to war camp community service, $20,000.

Frost, Harry, Elyria, Ohio, will to Old Ladies' Home, $20,000.

Gamble, Mr. and Mrs. D. B., Cincinnati, Ohio, gift to charity, $50,000.

Garrett, Mary E., Baltimore, Md., gift to Bryn Mawr College, $45,855.

Geissinger, Abigail E., Danville, Pa., gift to hospital, $1,600,000.

General Education Board, gift to Converse College, $50,000.

Georgetown, Md., various donors to school fund, $75,000.

German Methodist Church, Detroit, Mich. Unnamed donor, $10,000.

Germantown Hospital, gift from Mrs. U. G. Warden, $150,000.

Gibbons, Thomas, Kenosha, Wis., will to charity, $27,000.

Gillender, Jessie, New York, will to Johns Hopkins University, $100,000; will to charity. $100,000; will to Paulist Fathers, $750,000.

Gillon, Maude G., Dorchester, Mass., will to charity, $50,000.

Girls' Refuge, Portland, Ore., will, E. H. Wemme, Portland, Ore., $400,000.

Gluck, Alma, New York, gift to war relief, $25,000.

Goelet, R. W., New York, gift to American Ambulance Corps, $250,000.

Gordon, Eliza M., Pittsburgh, Pa., will to charity, $15,000.

Grandle, Mary E., Philadelphia, Pa., will to charity, $15,000.

Gribbel, John, Philadelphia, Pa., gift to Wesleyan College, $10,000.

Gruber, Charles J., Philadelphia, Pa., will to charity, $7000.

Guggenheim, Daniel, New York, gift to Jewish Relief Fund, $10,000; gift to botanical garden, $50,000.

Guggenheim, Murry, New York, gift to botanical garden, $50,000.

Guggenheim, Simon, New York, gift to Jewish Relief Fund, $10,000.

Gumliel family, New Orleans, La., gift to park, $10,000.

Haas, Isaac G., Cleveland, Ohio, will to charity, $5000.

Haats, James, Calumet, Mich., gift to charity, $10,000.

Hacker, Sarah H., Philadelphia, Pa., will to children's home, $5000.

Hagen, Roseanna, Philadelphia, Pa., will to charity, $9000.

Hahnemann Hospital, Philadelphia, Pa., various donors, $20,000.

Haines, Charles H., St. Charles, Ill., will to charity, $333,333; will to schools, $133,333.

Halifax Relief Fund, gift, $597,036.

Hall, Gardiner, family, S. Willington, Conn., gift to N. E. Wesleyan College, $150,000.

Hamilton College, will, Oliver H. Payne, $200,000.

Hampton Institute, gift from J. D. Rockefeller, $10,000; various donors, Rockford, Ill., $69,500.

Hamilton Institute, will, Mary A. Evans, $25,000.

Hand, Katherine, Shenandoah, Iowa, gift to charity, $65,000.

Handley, John, Scranton, Pa., will to charities, $1,630,000.

Hanover College, gift from Mrs. C. H. McCormick, $10,000.

Hanson, David H., Chicago, Ill., will to church, $5000.

Hard, Anson W., New York, will to charity, $17,500; will to library, $5000.

Harkness, Mary W., Madison, N. J., will to Cleveland Art Museum, $100,000.

Harkness, Mrs. S. V., New York, gift to Yale University, $3,000,000.

Harlan, Ursula M., Macomb, Ill., will to church, $35,000.

Harlem Settlement, New York, various donors, $18,000.

Harold, Ellen, Philadelphia, Pa., will to charity, $7500.

Harriman, Mrs. E. H., New York, gift to war camp community service, $25,000; gift to Yale University, $100,000.

Harris, Mary R., Chicago, Ill., will to charity, $45,000.

Harvard University, gift from Mrs. S. P. Blake, Boston, Mass., $50,000; gift from James Byrne, New York, $90,000; gift from National Canners' Association, $20,000; various donors, $1,187,160; will, Evert J. Wendell, New York, $10,000; will, Evelyn O. Weston, Boston, Mass., $65,000.

Haskell, H. H., Newton, Mass., gift to Newton Theological Seminary, $20,000.

Hastings, Neb., unnamed donor to college, $50,000; various donors to college, $50,000.

Hastings College, Neb., unnamed donor to college, $50,000; unnamed donor, $25,000; various donors, $50,000.

Haverford College, gift from Caroline E. Cope, $25,000; various donors, $75,000.

Haynes, Eliza, New York, will to charity, $50,000.

Hearn, Laura F., New York, will to Brooklyn Institute of Art, $16,500; will to charity, $27,000; will to Metropolitan Museum, $8665.

Hebrew Union College, Baltimore, Md., various donors, $140,000.

Hecksher, August, gift to park, Huntington, L. I., $125,000.

Heidelberg University, gift from Hannah E. Helfrich, Bucyrus, Ohio, $10,000; various donors, Tiffin, Ohio, $105,000.

Helfrich, Hannah E., Bucyrus, Ohio, gift to Heidelberg University, $10,000.

Hellman, J. W., San Francisco, Cal., gift to University of California, $50,000.

Hellman, Julius A., New York, will to Mt. Sinai Hospital, $100,000.

Hendericks, F. G., Eugene, Ore., gift to church, $5000.

Hendrix College, Montclair, N. J., various donors, $75,000.

Henry Street Settlement, New York, gift from Jacob H. Schiff, $10,000.

Hero Land Bazaar and war relief, New York, $400,000.

Hirsh, Samuel, New York, will to charity, $166,000; will to Hebrew Technical Institute, $10,000.

Hittler, Nelson, Pickaway, Ohio, will to schools, $155,000.

Hobart, Rowena W., Bridgewater, Mass., will to charity, $19,500.

Hoelscher, Paul, Buffalo, N. Y., will to church, $6500.

Hoge, John, Zanesville, Ohio, will to Actors' Benefit Fund, $500,000; will to New York Metropolitan Art Museum, $1,000,000.

Homeopathic Hospital, Camden, N. J., various donors, $45,000.

Hooker, Mrs. John D., Los Angeles, Cal., gift of playground to city, $5000.

Hospital, Newark, N. J., various donors, $150,000.

Hospital for Crippled Children, Memphis, Tenn., various donors, $15,000.

Houghton, G. S., Boston, Mass., gift to charity, $10,000.

Houston, Texas, various donors to Y. M. C. A., $20,000.

Huntington, L. I., gift to park from August Hecksher, $125,000.

Illinois, University of, gift from William R. McKinley, $120,000.

Indianapolis, Ind., various donors to charity, $16,000; various donors to Y. M. C. A., $37,500; various donors to Y. W. C. A., $10,000.

Industrial Relations Bureau, gift from Rockefeller Foundation, $20,000.

International Health Board, gift from Rockefeller Foundation, $951,150.

Irish Relief, Tag Day, Chicago, Ill., $15,000.

Italian Benefit, Chicago, Ill., concert, $13,500.

Jackman, Edwin S., Chicago, Ill., gift to city, $10,000.

James, Mrs. D. W., will to Congregational pension fund, $1,000,000; will to Methodist pension fund, $1,000,000; will to Presbyterian pension fund, $1,000,000.

James Millikin University, will, Joseph Millikin, $600,000; will, John E. Rouse, Decatur, Ill., $40,000.

Jefferson Medical College, will, J. M. Malatesta, $10,000.

Jenkins, Alfred, West Orange, N. J., will to library and charity, $125,000.

Jewish Organization, gift to Palestine sufferers, $800,000.

Jewish Relief Fund, gift from Daniel Guggenheim, N. Y., $10,000; gift from Simon Guggenheim, $10,000; gift from Louis Marshall, $15,000; gift from Julius Rosenwald, Chicago, $1,000,000; various donors, $965,000, $200,000; New York, $1.000,000; Philadelphia, $40,000.

Jewish Theological Seminary, gift from Jacob H. Schiff, New York, $100,000.

Jewish War Relief, gift from Julius Rosenwald, Chicago, $150,000; gift from Jacob H. Schiff, $200,000; various donors, Chicago, Ill., $600,000, $12,750, $50,000, $20,000, $20,000; drive, $17,500,000.

Johns Hopkins University, gift from Jessie Gillender, $100,000; gift from John D. Rockefeller, $420,000.

Johnson, John B., Philadelphia, Pa., will of paintings to city, $5,000,000.

Jones, Frances D., Cincinnati, Ohio, will to charity, $5000.

Kalamasoo Hospital, gift from Joseph S. Martin, Chicago, Ill., $15,000.

Kansas City, Mo., various donors to charity, $33,000.

Kenosha Hospital, gift from Abraham Slimmer, $25,000.

Kent, Helen, Boston, Mass., will to charity, $30,000.

Kentucky Masons, Grand Lodge, gift to charity, $100,000.

Kenyon College, gift from Samuel Mather, Cleveland, Ohio, $100,000.

Kernan, Peter F., Philadelphia, Pa., gift to charity, $5000.

Kidder, Peabody and Co., New York, gift to Allied War Relief, $100,000.

Kimball Union Academy, will, John C. Bryant, $50,000.

Klein, Babette F., Cincinnati, Ohio, will to charity, $5000.

Klein, W. L., Racine, Wis., will to Old People's Home, $100,000.

Knights of Columbus, gift to charity, $10,500; drive, $3,000,000; second drive, $3,000,000; gift from Rockefeller Foundation, $100,000; gift to charity, Kansas City, Mo., $50,000.

Knights of Pythias, war relief drive, $500,000.

Knowles family, Worcester, Mass., gift to Worcester Polytechnic Institute, $25,000.

Kosher Hospital, gift from Julius Rosenwald, Chicago, Ill., $10,000.

Kuh, Abraham, Chicago, Ill., will to charity, $6000.

Kysela, Frank, Cleveland, Ohio, will to schools, $7000.

Lake Erie College, various donors, $114,000.

Langhorne, C. D., Lynchburg, Va., gift to Virginia Episcopal School for Boys, $10,000.

Lapham, H. C., New York, gift to Yale University, $100,000.

Lasker family, Galveston, Tex., gift to charity, $75,000.

Lawrence College, unnamed donor, $16,000; various donors, Appleton, Wis., $63,954.

Library, Santa Barbara, Cal., gift from Andrew Carnegie, New York, $75,000; various donors, $39,000.

Lincoln Memorial University, various donors, $200,000; gift from William Thompson, Chicago, Ill., $25,000.

Lindenwood College, unnamed donor, $50,000.

Linn, William A., Hackensack, N. J., will to hospital, $27,000.

Locke, Mrs. George, gift of park to Lake Charles, $20,000.

Lordsburg College, various donors, $50,000; various donors, $100,000.

Louisville, Ky., various donors to Y. W. C. A., $8000; various donors to charity, $16,655; various donors to charity, $7846.

Lowenstein, E., Memphis, Tenn., gift to charity, $5000.

Lowenthal, Julius, Chicago, Ill., will to Art Institute, $5000; will to charity, $30,000.

Lucas, Mary H., gift of hospital site to Ripon, Wis., $10,000.

Luedke, August, Milwaukee, Wis., will to charity, $6000.

Lukens, Anna, Germantown, Pa., will to Women's Medical College, $10,000.

McCarrick, Samuel E., New York, will to charity, $10,000.

McCormack, Cyrus H., Chicago, Ill., gift to Y. M. C. A., $10,000.

McCormack, John, New York, gift to Red Cross, $100,000.

McCormack, Mrs. C. H., Chicago, Ill., gift to Hanover College, $10,000.

Mackay, Clarence and Mrs. J. U., gift of hospital to the United States government, $1,000,000.

Mackenzie, Kenneth A. J., Salem, Ore., gifts to University of Oregon, $25,000.

McKinley, William B., gift to University of Illinois, $120,000.

Maclean, Sarah A., Detroit, Mich., will to charity, $10,000.

McMullen, Randolph, Holiday, Pa., will to charity, $100,000.

Mager, Charles, New York, will to charity, $100,000.

Mahon, Edward G., New York, will to charity, $17,000.

Maimonides Hospital, various donors, Chicago, Ill., $25,000; various donors, $95,000.

Malatesta, J. M., Philadelphia, Pa., will to Jefferson Medical College, $10,000.

Mansfield, Ohio, various donors to hospital, $150,000.

Marden, William, Fennimore, Wis., will to charity, $100,000.

Marshall, Louis, New York, gift to Jewish Relief Fund, $15,000.

Martin, Joseph S., Chicago, Ill., will to Kalamazoo Hospital, $15,000.

Marting, J. G., and wife, Berea, Ohio, gift to Berea College, $25,000.

Massachusetts Institute of Technology, will, Evelyn O. Weston, $65,000.

Mather, Samuel, Cleveland, Ohio, gift to Kenyon College, $100,000.

Maxwell, Maria, San Francisco, Cal., will to charity, $15,000.

Mayo Brothers, Rochester, Minn., gift to University of Minnesota, $3,250,344.

Medical College, Cincinnati, Ohio, gift from Mary Emery, $300,000; various donors, $205,000.

Medical School, University of Chicago, gift from Billings family, Chicago, Ill., $1,000,000; gift from Dr. Norman Bridge, $100,000; gift from Mr. and Mrs. Max Epstein, $100,000; gift from Mrs. Edward Morris, Chicago, Ill., $50,000; gift from Julius Rosenwald, Chicago, Ill., $500,000; unnamed donors $350,000, $193,500; various donors, $200,000.

Memphis, Tenn., various donors to hospital, $200,000; various donors to Y. M. C. A., $20,000.

Mercy Home, Birmingham, Ala., various donors, $10,000.

Merritt, Mrs. Wesley, Detroit, Mich., gift to war recreation fund, $10,000.

Methodist Deaconess pension fund, various donors, Chicago, $200,000.

Methodist Home and foreign missions, various donors, $1,146,671.

Methodist Old People's Home, Chicago, Ill., various donors, $200,000.

Methodist pension fund, will, Mrs. D. W. James, $1,000,000.

Metropolitan Life Insurance, gift to National Tuberculosis Association, $100,000.

Metropolitan Museum, will, Harris B. Dick, $1,098,980; will of art collection, Isaac D. Fletcher, New York, $3,000,000; will, Isaac D. Fletcher $15,000,000; will, Laura F. Hearn, $8665; will, John Hoge, $1,000,000; gift from J. P. Morgan, New York, $7,500,000.

Michigan Diocese, gift to ministers' pension fund, $54,000.

Michigan, University of, gift from Levi Barbour, Detroit, Mich., $150,000.

Middletown College, will, Henry F. Walker, $100,000.

Military Camp Libraries, gifts, $320,000.

Millbank, Jeremiah, New York, gift to charity, $50,000.

Miller, Rebecca, New York, will to church, $25,000.

Millikin, Joseph, Decatur, Ill., will to charity, $150,000; will to James Millikin University, $600,000.

Milwaukee, Wis., unnamed donor, gift to charity, $50,000; various donors to charity, $15,000; $150,000; $150,000; $136,908.

Ministers' Pension Fund, gift from Michigan Dioceses, $54,000; gift from Southern Presbyterian Church, $127,500.

Minnesota, University of, gift from Mayo Brothers, $3,250,344; gift from Rockefeller Foundation, $25,000.

Monmouth College, gift from James A. Patton, Evanston, Ill., $50,000; gift from John D. Rockefeller, $60,000.

Montclair, N. J., unnamed donors to church, $8000.

Moore, H. L., Minneapolis, Minn., gift to Dartmouth College, $100,000.

Moore, Katherine E., New York, will to charity, $20,000.

Moore's Hill College, various donors, $1,000,000.

Morgan, J. P., New York, gift to Metropolitan Museum, $7,500,000; gift to Trinity College, $150,000; gift to Wadsworth Athenæum, Hartford, Conn., $100,000; gift to war camp community service, $25,000.

Morris, Edward, family, Chicago, Ill., gift to Abraham Lincoln Center, $207,500.

Morris, Mrs. Edward, gift to Medical School, University of Chicago, $50,000; gift to University of Chicago, $5000.

Morristown, Pa., various donors, to Y. M. C. A., $150,000.

Moseley, Charles W., Newburyport, Mass., will to charity, $250,000.

Moultrie, Ga., various donors to Y. M. C. A., $50,000.

Mount, Susan, New York, will to church, $300,000.

Mount Morris College, gift from P. A. Shearer, Auburn, Ill., $20,000.

Mt. Sinai Hospital, will, Julius Hellman, New York, $100,000.

Mount Union College, various donors, $250,000.

Muldowry, J. P., Pottsville, Pa., will to charity, $35,000.

Mullen, Mary E., Philadelphia, Pa., will to charity, $6400.

Muller, Amelia M., Yonkers, N. Y., will to education, $20,000.

Murray, Oscar E., Baltimore, Md., will to Widow's Home, $1,000,000.

Murray, Oscar J., Columbus, Ohio, gift to charity, $8000.

Museum of Fine Arts, Boston, Mass., will, Evelyn O. Weston, Boston, Mass., $65,000.

Musgrave, L. B., Jasper, Tenn., gift to Birmingham College, $10,000.

Muskingum College, various donors, $100,000.

Mytheville, Va., various donors to church, $8000.

Nash, A. L., Cincinnati, Ohio, gift to Berea College, $25,000.

National Canners' Association, gift to Harvard University, $20,000.

National Commission for Mental Hygiene, various donors, $159,000.

National Tuberculosis Association, gift from Metropolitan Life Insurance, $100,000.

Naylor, A. W., Berkeley, Cal., gift to Whittier College, $25,000.

Nelson, George A., Pasadena, Cal., will to charity, $27,000.

New Albany Relief Fund, various donors, $164,225; various donors, $65,400; various donors, Indianapolis, Ind., $11,164; various donors, St. Louis, Mo., $5000.

Newberry Library, will, John M. Wing, Chicago, Ill., $200,000.

Newcastle, Ind., various donors to charity, $20,000.

New England Fish Exchange, gift to charity, $5000.

New England Hospital, various donors, Boston, Mass., $75,000.

Newton, Lillie G., Asheville, N. C., will to charity, $65,000.

Newton Theological Seminary, gift from H. H. Haskell, Newton, Mass., $20,000.

New York, various donors to church, $32,000; unnamed donor to American Bible Society, $25,000; various donors to charity, $27,300; various donors to Jewish War Relief, $1,000,000; various donors to Jewish Charities, $75,198.

New York Chamber of Commerce, gift to Belgian Relief, $10,000.

New York Public Library, Oliver H. Payne, will, New York, $1,000,000.

New York Sun's Tobacco Fund, $124,687.

New York University, gift from Jacob H. Schiff, New York, $50,000; will, Kate O. Brown, $500,000.

Northern Pacific Railroad, bonus gift to employees, $750,000.

Oak Park, Ill., various donors, gift to Y. M. C. A., $60,000.

Odd Fellows grand lodge, gift to war relief, $2,000,000.

Old Ladies' Home, Elyria, Ohio, will, Harry Frost, $20,000.

Old People's Home, will, W. L. Klein, $100,000; gift from Mr. and Mrs. C. N. Dietz, Omaha, Neb., $10,000.

Oliver, Frances M., Charleston, S. C., will to charity, $85,000.

Olivet College, gift from Anna Sears, Ann Arbor, Mich., $5000.

Olivet Institute, unnamed donor, $5000; unnamed donor, Chicago, Ill., $100,000.

Ooltewah, Tenn., various donors to college, $100,000.

Oregon Agricultural College, gift from J. P. Apperson, $25,000.

Oregon, University of, gifts from Elks war relief association $60,000; gifts from Kenneth A. J. McKenzie, Salem, Ore., $25,000; various donors, $15,000.

Osteopathic Hospital, various donors, Chicago, Ill., $200,000.

Ottawa University, gift from John D. Rockefeller, New York, $400,000.

Ottumwa, Iowa, various donors to charity, $11,000.

Palestine Jews' relief, various donors, $473,000.

Park, C. C., Monticello, Cal., gift to charity, $75,000.

Parker, William H., Canton, Ill., gift to library, $30,000.

Parting of the Ways Home, Pittsburg, Pa., various donors, $7000.

Partridge, C. Wm., Chicago, Ill., will to charity, $5000.

Pasadena, Cal., various donors to charity, $6000, $25,000; various donors to Y. W. C. A., $22,000.

Pathé, Paul A., Newburyport, Mass., gift to city, $21,000.

Patton, James A., Evanston, Ill., gift to Monmouth College, $50,000.

Payne, Oliver H., New York, will to charity, $1,400,000; will to Cornell University, $500,000; will to Hamilton College, $200,000; will to N. Y. Public Library, $1,000,000; will to Phillips Exeter Academy, $500,000; will to University of Virginia, $200,000; will to Yale University, $1,000,000.

Peabody College of Teachers, gift from Carnegie Corporation, $180,000.

Peckham, Annie A., New York, will to charity, $60,000.

Penn College, unnamed donor, $60,000.

Pennsylvania, University of, will, Alexander Stiles, $15,016; will, Alexander Stiles, $15,016; will, Anna W. Syms, Warren, Pa., $25,000, various donors, $75,000, $85,000.

Perkins, Melisser, Racine, Wis., will to church, $6000.

Peterboro Colony, donation, $10,000.

Peterson, P. A., Rockford, Ill., gift to charity, $5000.

Philadelphia, Pa., unnamed donor to charity, $250,000; various donors to charity, $5000; $50,000; various donors to church, $28,000; $36,000; $61,000; various donors to war relief, $250,000.

Philadelphia Orchestra, various donors, $1,000,000; various donors, $648,000.

Phillips Exeter Academy, gift from E. J. Cruley, $100,000; will, Oliver H. Payne, New York, $500,000; gift from Edward L. Tuck, Paris, $100,000.

Philomath College, will, Sarah A. Baker, Monrovia, Cal., $80,000.

Physicians and Surgeons' Hospital, various donors, Wilmington, Del., $50,000.

Pierce, John B., Peabody, Mass., gift to employees, $8,500,000.

Pittsburg, Pa., various donors to hospital, $60,000.

Pittsburg, Pa., Y. M. C. A., gift from Julius Rosenwald, Chicago, $25,000.

Polish Relief Fund, New York, unnamed donor, $135,000.

Portland, Me., various donors to missions, $65,000.

Posey, Louis P., Philadelphia, Pa., will to church, $10,000.

Presbyterian Hospital, New Orleans, La., gift from Corinne Casanas, $55,000.

Presbyterian Missions, St. Louis, Mo., various donors, $60,000.

Presbyterian Pension Fund, will, Mrs. D. W. James, $1,000,000.

Price, Lawrence, Mt. Clemens, Mich., will to charity, $275,000.

Price, Warner, Lansing, Mich., will to charity, $202,500.

Princeton Students, gift to Y. M. C. A., $16,000.

Princeton University, various donors, $284,000.

Providence Catholic College, various donors, Providence, R. I., $37,000.

Pullman, Mrs. G. M., Chicago, Ill., gift to French War Fund, $5000.

Rabbis' Pension Fund, gift from Jacob Schiff, New York, $100,000.

Red Cross, various donors, Detroit, Mich., $15,000; drive, $114,000,000; gift from Henry Ford, Detroit, Mich., $500,000; gift from John McCormack, New York, $100,000; various donors, New Orleans, La., $7500; gift from Rockefeller Foundation, New York, $5,000,000; gift from Jacob H. Schiff, New York, $10,000.

Reed, David, Massillon, Ohio, gift to hospital, $100,000.

Reed, Hannah, Fort Branck, Ind., gift for schools, $30,000.

Reid, Daniel G., New York, gift of field hospital to government, $284,000; gift to hospital, $175,000.

Reifer, Peter, Huron, Ohio, will to hospital, $40,000.

Rice, Frank B., St. Louis, Mo., will to church, $10,000.

Richardson, J. J., Davenport, Iowa, will to charity, $100,000.

Richmond, Va., various donors to charity, $150,000; various donors to Y. W. C. A., $12,000.

Rickley, Ralph R., Columbus, Ohio, gifts to Heidelberg University, $10,000.

Rives, George H., New York, will to Columbia University, $50,000.

Robinson, W. A., Louisville, Ky., will to charity, $82,000, $52,000.

Rockefeller, John D., New York, gift to Chinese Hospitals, $3,000,000; gift to educational purposes, $335,000; gift to Elmira College, $100,000; gift to Hampton Institute, $10,000; gift to Johns Hopkins University, $70,000, $350,000; gift to Monmouth College, $60,000; gift to Ottawa University, $400,000; personal contributions to war fund, $70,000,000; gift to University of Chicago, $2,000,000; gift to Washington University, $1,000,000; gift to Yale University, $100,000.

Rockefeller, John D., Jr., gift of park to New York, $5,000,000; gifts to Y. W. C. A., $200,000.

Rockefeller Foundation, New York, gift to Administration Bureau, $9820; gift to American Baptist Foreign Missions, $75,000; gift to American Cantonment, $150,000; gift to Chinese Medical Schools, $2,600,000; gift to Clinic Medical Bureau, $814,827; gift to Industrial Relations Bureau, $20,000; gift to International Health Board, $951,150; gift to Jewish War Relief, $100,000; gift to Knights of Columbus, $100,000; gift to medical research, $2,287,156; gift to medical work, $402,500; gift to Minnesota, University of, $25,000; gift to Red Cross, $5,000,000; gift to Rockefeller Institute, $260,000; gift to training camps, $870,000; gift for war relief, $10,000,000; gift to Washington and Jefferson College, $100,000; gifts to Y. M. C. A., $200,000, $3,500,000, $67,000; gift to Y. W. C. A., $500,000; gift to miscellaneous objects, $25,000.

Rockefeller General Education Board, New York, gift to Cornell University, $100,000; gift to De Pauw University, $150,000; gift to negro education, $197,500; gift to Swathmore College, $125,000.

Rockefeller Institute, gift from Rockefeller Foundation, $260,000.

Rockford, Ill., various donors to army camp, $100,000.

Rock, Mary, Bayport, N. Y., will to hospital, $90,000.

Rocky Mountain Club, New York, gift to Belgian Relief Fund, $500,000.

Roesch, John M., New York, gift to charity, $40,000.

Rose Polytechnic Institute, St. Louis, Mo., various donors, $20,000; $97,650.

Rosenwald, Julius, Chicago, Ill., gift to charity, $1,000,000; gift to Jewish Charities, $25,000; gift to Jewish War Relief Fund, $1,000,000, $150,000; gift to Kosher hospital, $10,000; gift to Pittsburg Y. M. C. A., $25,000; gift to University of Chicago, Medical School, $500,000; gift to war camp community service, $25,000; gift to Women's Club, $50,000; gift of Y. M. C. A. to Birmingham, Ala., $100,000.

Rouse, John E., Decatur, Ill., will to Millikin College, $40,000.

Safford, O. M., Cleveland, Ohio, gift to church, $25,000.

Sage, Mrs. Russell, New York, gift to Emma Willard School, $250,000.

St. Bartholomew's Church, New York, (new) various donors, $1,000,000.

St. Bartholomew's Church, New York, gift to charity, $23,000.

St. John the Divine, Cathedral of, New York, various donors, $150,000.

St. Joseph Hospital, various donors, Kansas City, Mo., $86,950.

St. Louis, Mo., various donors, gifts to charity, $25,000; various donors to church, $10,022; various donors to church, $5000.

St. Luke's Hospital, New York, gift from William Schlemmer, $50,000.

St. Norbert's College, gift from Henry Boyle, $115,000.

Salem, Mass., gift from Henry C. Frick, New York, $10,000.

Salvation Army, Chicago, Ill., drive, $75,000.

Samaritan Hospital, Sioux City, Iowa, gift from M. C. Davis, $100,000.

Sanborn, Helen J., Boston, Mass., will to Wellesley College, $15,600.

Sands, Benjamin A., New York, will to charity, $500,000.

Sandusky, Ohio, various donors to church, $10,000.

San Francisco, Cal., various donors to relief of Salvador, $13,500.

San Francisco Theological Seminary, gift from Robert Dollar, $50,000.

Sargent, H. E., Chicago, Ill., gift to Field Museum, $40,000.

Schiff, Jacob Henry, New York, gift to American Red Cross, $100,000; gift to charity, $25,000; gift to Henry Street Settlement, $10,000; gift to Montefiore Home and Hospital, $100,000; gift to Jewish charities, $100,000; gift to Jewish Theological Seminary, $100,000; gift to Jewish War Relief, $200,000; gift to New York University, $50,000; gift to Rabbis' Pension Fund, $100,000; gift to Red Cross, $10,000; gift to other charities, $500,000.

Schlemmer, William, New York, will to St. Luke's Hospital, $50,000.

Schloss, Nathan, Kansas City, Mo., will to charity, $200,000.

Schmidt, Carl, Detroit, Mich., gift to hospital, $35,000.

Scott, F. W., Richmond, Va., gift to church, $10,000.

Scott, Sophie S., will to charity, $20,000.

Scottish Rites Masons, Supreme Council, gift to war relief, $1,100,000.

Scripps, Ellen, La Jolla, Cal., gift to Y. M. C. A., $15,000.

Sears, Anna, Ann Arbor, Mich., will to Olivet College, $5000; will to church, $20,000.

Seligman, Isaac N., New York, will to charity, $100,000.

Shallcross, J. K., Philadelphia, Pa., will to charity, $11,500.

Shattuck, Chicago, Ill., gift to war relief, $50,000.

Shearer, Mrs. M. B., Pasadena, Cal., will to charity, $150,000.

Shearer, P. A., Auburn, Ill., gift to Mount Morris College, $20,000.

Sheldon, C. H., Columbus, Ohio, gift to church, $10,000; gift to Y. M. C. A., $10,000.

Shepherd, Fannie, Greenwood, Pa., will to charity, $10,000.

Shepherd, Mrs. Finley, New York, gift to Y. M. C. A., $100,000.

Shepperd, Penelope, Philadelphia, Pa., will to charity, $50,000.

Shimmer, Abraham, Dubuque, Iowa, will to charity, $500,000.

Shiver, T. H., Westminster, Md., will to charities, $30,000; will to Catholic University of America, $10,000.

Simmons College, will, Mary A. Evans, Boston, Mass., $100,000.

Simmons, Ernest, Greenwich, Conn., will to church, $6000.

Sinclair, J. H., Colorado Springs, Colo., will to church, $9000.

Singer heirs, Pittsburg, Pa., gift to Allegheny Memorial Hospital, $250,000.

Sioux City, Iowa, various donors to charity, $25,000.

Slimmer, Abraham, Dubuque, Iowa, gift to Kenosha Hospital, $25,000.

Sloan, Mrs. W. D., New York, gift to Y. W. C. A., $10,000.

Smith, Mrs. Alexander, Yonkers, N. Y., will to charity, $118,000.

South Georgia Methodist Conference, gift to Emory University, $125,000.

South Presbyterian Church, gift to Ministers' Pension Fund, $137,500.

Southwell, Henry E., Chicago, Ill., will to charity, $300,000.

Springfield, Mass., various donors to hospital, $175,000; various donors to Y. W. C. A., $20,000.

Standish, James D., Detroit, Mich., will to charity, $7000.

Statt, Sophie E., New York, will to charity, $91,000.

Steiner, Albert, Atlanta, Ga., gift to charity, $25,000.

Steinheart, Ignaz, San Francisco, Cal., gift to aquarium, $100,000.

Stevenson, John A., Norristown, Pa., will to charity, $42,000.

Stiles, Alexander, Conshohocton, Pa., will to University of Pennsylvania, $15,016.

Stillman, Joseph, New York, gift to French Orphans, $200,000.

Stockton, Cal., various donors to charity, $70,000.

Stotesbury, Mr. and Mrs. E. T., Philadelphia, Pa., gift to Y. W. C. A., $100,000.

Studebaker, J. M., South Bend., Ind., will to church, $55,000.

Students' war fund, gift from eighteen American colleges, $861,488.

Sullivan, Katherine A., Boston, Mass., will to charity, $86,000.

Sunday, Billy, free will offering to Y. M. C. A., $55,300; $82,381.

Swathmore College, gift from Rockefeller General Education Board, $125,000; gift from J. S. and W. P. Worth, $50,000.

Swedish-American Hospital, various donors, Rockford, Ill., $80,000.

Syms, Anna W., Warren, Pa., will to University of Pennsylvania, $25,000.

Syracuse University, will by John D. Archbold, $500,000.

Temple Baptist Church Home, various donors, Los Angeles, Cal., $210,000.

Tenzer, Mr. and Mrs. H. B., Defiance, Ohio, gift to Defiance College, $10,000.

Thatcher, George A., Denver, Colo., gift of fountain to city, $100,000.

Thompson, Miriam M., Boston, Mass., will to church, $29,000.

Thompson, Mrs. W. R., New York, gift to war relief, $10,000.

Thompson, William, Chicago, Ill., gift to Lincoln Memorial College, $25,000.

Tirrill, W. A., Nashville, Tenn., gift to Y. M. C. A., $10,000.

Toepfer, Emma M., Milwaukee, Wis., will to charity, $20,000.

Toledo, Art Museum, unnamed donor, $400,000; various donors, $600,000.

Torrey, Alvira, Los Angeles, Cal., will to church, $15,000.

Training School for Girls, Los Angeles, Cal., will, Charles A. Canfield, $100,000.

Trinity College, gift from J. P. Morgan, $150,000.

Tuck, Edward, Paris, gift to Phillips Exeter Academy, $100,000.

Tucker, Mrs. Henry C., Atlanta, Ga., will to education of girls, $50,000.

Tufts, Annie H., Boston, Mass., will to charity, $27,000.

Tuskegee Institute, will, Mary A. Evans, Boston, Mass., $100,000.

Tyler, W. S., Cleveland, Ohio, will to hospital, $100,000.

Union Theological Seminary, Richmond, Va., unnamed donor, $100,000.

Valentine, Samuel H., New York, will to Aero Club, $10,000; will to Amherst College, $5000; will to charity, $30,000; will to church, $5000.

Valparaiso University, various donors, $40,000.

Vanderbilt, W. K., New York, gift to war relief, $200,000.

Vassar College, various donors, $1,000,000.

Virginia Episcopal School for Boys, gift from C. D. Langhorne, $10,000.

Virginia, University of, gift from Elks Grand Lodge, $60,000; will, Oliver H. Payne, $200,000.

Vogel, Martin, New York, gift to charity, $8000.

Waco, Texas, various donors to schools, $25,000.

Wade, J. H., Cleveland, Ohio, gift to charity, $1,000,000.

Wadsworth Athenæum, Hartford, Conn., gift from J. P. Morgan, $100,000.

Walker, Henry F., New York, will to Middletown College, $100,000.

Walker, William H., New York, will to charity, $45,000.

Wallace, William J., Jacksonville, Fla., will to poor children, $100,000.

Walsh, Anna E., New York, will to charity, $111.-344.

Waltham, Mass., various donors to church, $12.-250.

Wanamaker, John, Philadelphia, Pa., gift to church, $5000.

War Camp Fund, various donors. San Francisco, Cal., $150,000.

War Libraries, various donors, Iowa. $33,000.

War Recreation Fund, various contributions, $2.-000.000; gift from Mrs. Wesley Merritt, $10,000.

War Relief Fund, January, $2,486,748; February, $8,015,744; March, $2,689,807; April, $4,583.-778; June, $1,326,793; July, $1,449,507; August, $1,312,500; September, $2,735,830; October, $1.-542,326; November, $1,380,779; December, $6,880.-487; gift from Alma Gluck, $25,000; gift from August Belmont, New York, $10,000; Christian Scientists' donations, $500,000; gift from Odd Fellows Grand Lodge, $2,000,000; gift from Arthur Shattuck, $50,000; gift from Supreme Council, Scottish Rites Masons, $1,100,000; gift from Mrs. W. R. Thompson, $10,000; gift from W. K. Vanderbilt, New York, $200,000; various donors, Philadelphia, Pa., $250,000; gift from Y. M. C. A. National Council, $1,000,000.

Warden, Mrs. U. G., gift to Germantown Hospital, Pa., $150,000.

Warner, Augustus, Akron, Ohio, will to charity, $620,000.

Washington and Jefferson College, gift from Rockefeller Foundation, $100,000; various donors, $75,873.

Washington University, gift from John D. Rockefeller, $1,000,000.

Waterman, Arba A., Chicago, Ill., will to church, $100,000.

Watson, Mrs. Henry, Philadelphia, Pa., will to church, $100,000.

Watson, Joseph, Chicago, Ill., gift to charity, $600,000.

Watson, Josephine, Springfield, Mass., will to charity, $1,000,000; will to Drury College, $5000; will to Y. M. C. A., $100,000.

Weed, George E., New York, will to charity, $20,-000.

Weeks, Andrew, Stephens Point, Wis., will to Carroll College, $5000; will to church, $13,000; will to library, $7000.

Weil, Jonas, New York, will to charity, $22,500.

Wellesley College, will, Helen J. Sanborn, $15.-600.

Wemme, E. H., Portland, Ore., will to girls' refuge, $400,000.

Wendell, Evert J., New York, will to charity, $25,000; will to Harvard University, $10,000.

Wesleyan Academy, will, Augusta E. Corbin, $75.-000.

Wesleyan College, West Virginia, various donors, $552,000.

Wesleyan College, N. E., Alumni gift, $15,000; gift from Gardiner Hall family, $150,000.

Wesleyan Institute, Washington, Del., various donors, $100,000.

Wesleyan University, gift from John Gribbel, $10,000.

West, Charles W., New York, will to hospital, $100,000.

Westchester, Pa., gift to hospital by P. S. Dupont, $80,000; various donors, $80,000.

Western College for Women, various donors, $6000.

Weston, Evelyn O., Boston, Mass., will to charity, $65,000; will to Massachusetts Institute of Technology, $65,000; will to Harvard University, $65,000; will to Museum of Fine Arts, $65.-000.

Wheaton College, gift from Charles H. Case, Chicago, Ill., $322,650.

White Elephant Sale, Chicago, Ill., proceeds to charity, $25,869.

Whitsey, E. A., Sheridan, Wyo., will to education, $750,000.

Whittier College, gift from A. W. Naylor, Berkeley, Cal., $25,000; various donors, $25,000.

Widows' Home, Baltimore, Md., will, Oscar E. Murray, Baltimore, Md., $1,000,000.

Wilgus, W. A., Hopkinsville, Ky., will of playground to city, $10,000.

Willard Settlement, Boston, Mass., various donors, $40,000.

Wilson, Margaret W., New York, gift to charity, $10,000.

Wing, John M., Chicago, Ill., will to Newberry Library, $200,000.

Winnetka, Ill., various donors, gift to charity, $5000.

Wittenberg College, unnamed donor, $6000.

Wolf, Otto C., Philadelphia, Pa., will to hospital, $5000.

Woman's Club, Chicago, Ill., gift from Julius Rosenwald, $50,000.

Women's Medical College, will, Anna Lukens, Germantown, Pa., $10,000.

Worcester Polytechnic Institute, gift from Knowles family, $25,000.

Working Girl's Home, gift from Frank F. Betz, Chicago, Ill., $50,000.

Working Girls' Vacation. New York Concert, $25,000.

Worth, J. A., and W. P., Philadelphia, Pa., gift to Swarthmore College, $50,000.

Wright, John D., New York, will to charity, $74,000.

Yale University, gift from Charles P. Brookes, Ansonia, Tex., $50,000; gift from Mrs. E. H. Harriman, New York, $100,000; will, Oliver H. Payne, New York, $1,000,000; various donors, $212,-393; $265,000; gift from Mrs. S. V. Harkness, $3,000,000; gift from H. C. Lapham, New York, $100,000; gift from J. D. Rockefeller, New York, $100,000.

Yom Kippur, donation to charity, $500,000.

Y. M. C. A., free will offering, Billy Sunday, $87.-681; gift from George M. Brady, Detroit, Mich., $10,000; drive, $51,722,580; gift from Ellen Scripps, $15,000; gift from Mrs. Finley Shepherd, New York, $100,000; gift from Cyrus McCormack, Chicago, Ill., $10,000; gift from Princeton Students, $16,000; gift from Rockefeller Foundation, New York, $3,500,000; $67,000; $200,000; gift from C. H. Sheldon, $10,000; gift from W. A. Tirrill, Nashville, Tenn., $10,000; U. S. Steel Co., and other corporations, $300,000; various donors, Chicago, Ill., $32,500; $8,000; $190,000; various donors, Columbus, Ohio, $80,000; various donors, Columbia, Mo., $5000; various donors, Indianapolis, Ind., $37,500; various donors, Morristown, Pa., $150,000; various donors, Nashville, Tenn., $165,000; various donors, Oak Park, $60,000; will, Josephine Watson, $100,000.

Y. M. C. A., Charleston, S. C., various donors, $30,000; Columbus, Ohio, various donors, $20,000; Elkhart, Ind., various donors, $51,000; Los Angeles, Cal., various donors, $20,000; McKeesport, Ky., $300,000; Marion, Ind., various donors, $30.-000; Minneapolis, Minn., various donors, $40,000; Monmouth, Ill., various donors, $75,000; Pittsburgh, Pa., various donors, $1,000,000; gift from Julius Rosenwald, $25,000; St. Louis, Mo., various donors, $24,000; Springfield, Ill., various donors, $50,512; Wausau, Wis., various donors, $7000.

Y. M. C. A. Fund, total for soldier's welfare work, $2,000,000.

Y. M. C. A. National Council, New York, gift to War Relief, $1,000,000; subscriptions for Army Relief, $3,000,000.

Youngstown, Ohio, various donors to charity, $50.-000.

Y. W. C. A., gift from Rockefeller Foundation, New York, $500,000; gifts from John D. Rockefeller, Jr., New York, $200,000; gift from Mrs. W. D Sloan, New York, $10,000; gift from Mr. and Mrs. E. T. Stotesbury, $100,000; various donors, Altoona, Pa., $50,000; various donors, Indianapolis, Ind., $10,000; various donors, Louisville, Ky., $8000; various donors, Pasadena, Cal., $22,000; various donors to work, $729,000.

Y. W. C. A., New York, various donors, $15,000; Portland, Ore., various donors, $15,000.

Zanesville, Ohio, various donors, to Y. M. C. A., $221,000.

Zinke, Bertha, Detroit, Mich., gift to charity, $40,000.

Zoölogical Garden, Cincinnati, Ohio, various donors, $125,000.

See also UNIVERSITIES AND COLLEGES.

GILPINITE. See MINERALOGY.

GIPSY MOTH. See ENTOMOLOGY.

GLASS. See CHEMISTRY, INDUSTRIAL.

GOLD. With a gold production for the United States and colonies of $92,590,300 in 1916, as compared with $101,035,700 in 1915, there was a corresponding decline in other countries so that the total production fell below the figure of $468,724,918 for 1915, which recorded the high water point in the world's gold production. California and Colorado produced 928,000 fine ounces in 1916. The value of the output of Nevada was $9,064,700. Alaska produced 780,037 fine ounces valued at $16,124,000. The 1917 and 1916 production by States is given in the accompanying table.

PRODUCTION OF GOLD IN THE UNITED STATES DURING THE CALENDAR YEARS 1916 AND 1917

State or Territory	*Gold—1917*		*Gold—1916*	
	Fine Ounces	*Value*	*Fine Ounces*	*Value*
Alabama	201	$4,200	358	$7,400
Alaska	733,911	15,171,300	780,037	16,124,800
Arizona	267,700	5,533,800	197,989	4,092,800
California	1,006,969	20,815,900	1,063,302	21,980,400
Colorado	771,828	15,955,100	928,075	19,185,000
Georgia	288	6,000	987	20,400
Idaho	34,419	711,500	51,195	1,058,300
Illinois	......	......	......	......
Maryland	6	100	......	......
Michigan	......	......	......	......
Missouri	......	......	......	......
Montana	181,720	3,756,500	209,386	4,328,400
Nevada	334,894	6,922,900	438,505	9,064,700
New Hampshire	......	......	......	......
New Mexico	49,590	1,025,100	65,306	1,350,000
North Carolina	759	15,700	1,113	23,000
Oklahoma	......	......	......	......
Oregon	81,144	1,677,400	91,985	1,901,500
South Carolina	53	1,100	15	300
South Dakota	357,619	7,392,600	361,444	7,471,700
Tennessee	258	5,300	276	5,700
Texas	42	900	24	500
Utah	175,133	3,620,300	186,679	3,859,000
Vermont	......	......	14	300
Virginia	81	1,700	24	500
Washington	21,036	434,900	28,087	580,600
Wyoming	10	200	977	20,200
Philippine Islands	67,921	1,404,000	73,249	1,514,200
Porto Rico	6	100	29	600
Totals	4,085,589	$84,456,600	4,479,056	$92,590,300

At the end of 1917, it was estimated that the gold output of the world was valued at about $430,000,000 or approximately six per cent less than the 1916 output. The 1917 figure, it should be remembered, was but an estimate although it seemed assured that the production was considerably less than that of the previous year and the increased cost of labor and supplies naturally tended to discourage production as the value of the gold produced remained unchanged.

Dredging operations for gold continued where the machinery had been installed in previous years, but without any notable advance. The usual success was achieved in California and Colorado, while in Alaska existing plants were operating but without any great success as the cost of fuel and labor worked against substantial profits in the territory. In British Guiana and Colombia, the work of the year was fairly successful, and in the latter country, an oil-electric-driven dredge was ready for installation. In Australia, 40 gold dredges were reported operating, but the total dividends from all were said to be exceeded by the earnings of a single dredge in the United States, and in New Zealand, the dredging was hardly more profitable. Dredging continued in the Philippines and machinery of advanced types was in operation. Russia under normal conditions would have made considerable advances in the dredging of gold, and while conditions on the more distant properties were favorable for operation, political events naturally were against further installations or investments. In Chosen, a 10-ft. all-steel electrically driven dredge went into successful operation towards the end of the year and was designed to deal with certain specific conditions. Conditions in this country were such that under more favorable circumstances additional dredging could be carried on. See METALLURGY AND FINANCIAL REVIEW.

GOLD COAST. A British crown colony and protectorate, with Ashanti and the Northern Territories, extending for 334 miles along the Gulf of Guinea. Area of the colony, 24,200 square miles; of Ashanti, 20,000; of the Northern Territories, 35,800—total, 80,000. Population of the colony, 853,766; Ashanti, 287,814; Northern Territories, 361,806. Accra, the capital, had 19,585 inhabitants.

	1912	*1913*	*1914*	*1915*
	£	£	£	£
Imports *	4,023,822	4,952,494	4,456,968	4,509,538
Exports *	4,302,802	5,427,106	4,942,656	5,943,631
Revenue	1,230,850	1,301,566	1,331,713	1,456,130
Expend.	1,157,091	1,358,291	1,755,850	1,627,015

* Including bullion and specie.

The comptroller of customs says in his report: "The colony may congratulate itself once more on its virtual immunity during the year from the consequences of the war, and on being able to increase its trade in spite of the disturbed markets abroad and shortage and uncertainty of shipping at home. No doubt a large proportion of the increased value of imports, but by no means the greater, was due to inflated prices, but that these prices did not discourage or stop imports is more of a tribute to the wealth of the colony and the prodigality of its possessors when it comes to buying what they want. The holding up of the 1916-17 cacao crop for want of shipping was a disappointment, of course, and might easily have led to drastic economies among the natives, but that such an occurrence is not regarded as serious and that the accumulated wealth of recent and more prosperous years is readily available for present necessaries, and even luxuries, is a very striking indication of the colony's financial progress."

GOLD MOVEMENTS IN 1917. See FINANCIAL REVIEW.

GOLF. The executive committee of the United States Golf Association cancelled all its annual tournaments in 1917 following the declaration of war. The big Eastern associations took the same step with the result that only the Western and Southern organizations held title competitions. The abandonment of these fixtures, however, did not sound the doom of this sport for the year as in their stead a host of exhibition matches were arranged, the proceeds from which were turned over to the Red Cross and various other war relief funds. An appeal was made by Howard F. Whitney, secretary of the U. S. Golf Association, to 1497 golf clubs throughout the country with the result that more than $75,000 was raised in special one-day tournaments, and a grand total of $500,000 during the season.

Charles E. (Chick) Evans, holder of the amateur and open titles had no occasion to defend his laurels in 1917 and took part in none of the tournaments held. He played several exhibition matches during the year, his best work being accomplished in a four-ball contest at the Whitemarsh Valley Club where he and Norman H. Maxwell defeated James Barnes and Edward Loos, two Philadelphia professionals after two extra holes. It was the fine work of Evans that made the victory won by him and his partner possible.

Francis Ouimet, who later joined the colors, was invited by the Western Association to compete in the amateur tourney and carried off the title. Ouimet was ineligible to compete under a ruling of the U. S. G. A. but the Western body refused to support the contention of the former that Ouimet in selling golf paraphernalia had lost his standing as an amateur.

The Western open championship was won by James M. Barnes who established a record of 283 for 72 holes. Robert Jones hailed as the "boy wonder" of Atlanta, Ga., captured the Southern amateur title. Another youngster to distinguish himself was Norman H. Maxwell who won the United North and South amateur championship from a field including such veterans as John G. Anderson and Gardiner W. White of New York and William Fownes of Pittsburgh, Pa.

Miss Alexa Stirling of Atlanta, women's national champion, did not take part in any tournaments during the year. This left the field clear for Mrs. William A. Gavin of Baltusrol who won the women's Metropolitan Golf Association championship. She also defeated Jerome D. Travers in a 36-hole handicap match in which Travers allowed her nine strokes in each eighteen. In the West Mrs. F. C. Lette of Cincinnati retained her title by defeating Miss Elaine V. Rosenthal in the final match.

GOMPERS, SAMUEL. See UNITED STATES AND THE WAR.

GÖRIZIA. The Italian form of Görz, capital of the Austrian crownland of Görz and Gradisca (q.v.). See WAR OF THE NATIONS.

GÖRZ AND GRADISCA. A crownland of Austria, lying between Venetia on the west and Carniola on the east. Area, 1127 square miles. The population according to the census of December 31, 1910, was 260,721, as compared with 232,897 in 1900. In 1910 the number of Austrian subjects was 249,893; of these, Slovenian was the vernacular of 154,564 (61.85 per cent); Italian (including Ladin), 90,119 (36.06 per cent); German, 4486 (1.80 per cent). Of the population in 1910, Catholics numbered 259,488 (99.53 per cent); Evangelicals, 749; Jews, 338. About 59 per cent of the inhabitants were dependent on agriculture. The capital is Görz (Goritz, Gorizia); population (1910), 30,995. The crownland has a unicameral diet of thirty members and is represented in the Austrian Reichsrat by six members.

GOTCH, FRANK. The retired heavyweight champion wrestler of the world died on December 16, 1917. He was born at Humboldt, Iowa, on April 28, 1878. He was the first man to use the famous "toe hold." He won the world's title from Jenkins, in 1904. His greatest match was probably the one in 1910, when he pinned Zbyszko's shoulders to the mat in six and one-quarter seconds. His wonderful endurance was shown in his first match with Hackenschmidt, when the latter gave up the contest after two hours and three minutes of gruelling wrestling. Gotch retired from the mat in 1911.

GOUCHER COLLEGE. A non-sectarian institution for the education of women, at Baltimore, Md. There were 704 students in the fall of 1917 and 54 members of the faculty; of the latter about twelve were additions over the previous year. Volumes in the library numbered 35,000. Productive funds amounted to over $1,000,000 and the income in 1917 was $160,000. A gift of $250,000 from the General Education Board and the Rockefeller Foundation was received in 1917. Goucher College was founded in 1885. President, Wm. W. Guth, Ph.D.

GOVERNMENT OWNERSHIP. See RAILWAYS.

GRAIN. See FOOD CONTROL; OATS; WHEAT; ETC.

GRATACAP, LOUIS POPE. Dean of the curators of the Museum of Natural History in New York City, died on December 19, 1917. He was born in Brooklyn, N. Y., in 1850 and graduated from the College of the City of New York in 1869. He then studied at the School of Mines at Columbia University and later did research work in geology and mineralogy. He became assistant curator in mineralogy at the Museum of Natural History in 1876 and in 1900 was made curator in the same branch. Later he became head of the conchology department also. His work in public education at the museum was especially noteworthy. Among his publications are: *Geology of the City of New York; Popular Mineralogy; A Woman of the Ice Age;* and *The Certainty of a Future Life on Mars.*

GRAVEURE, LOUIS. See MUSIC, *Artists.*

GREAT BRITAIN. THE UNITED KINGDOM of GREAT BRITAIN AND IRELAND. A constitutional monarchy. The capital is London. Great Britain consists of England, Scotland, and Wales, but the term "Great Britain" is often used to mean United Kingdom. England and Wales in many respects are regarded as a single division of the United Kingdom. Attached to the United Kingdom, but regarded neither as parts of it nor yet as colonies, are the Isle of Man and the Channel Islands. All of these terms are comprehended in "British Isles." The United Kingdom and its possessions, that is, all territories subject to the ultimate control of the Parliament at London, constitute the British Empire.

Area and Population. The area of the United Kingdom, including inland water, is stated at 121,331 square miles; with the Isle of Man and the Channel Islands, 121,633 square miles. The latter area is about 58.2 per cent of the area of Germany, or somewhat less than the combined areas of Missouri and Arkansas (122,755 square miles). The population of the United Kingdom, as estimated for June 30, 1914, a month before the outbreak of the great war, was 46,089,249, thus distributed: England and Wales, 36,960,684; Scotland, 4,747,167; Ireland, 4,381,398. The estimated population of the United Kingdom on June 30, 1914 (46,089,249), was about 68 per cent of the estimated population of Germany on the same date. As estimated for June 30, 1915, the civil population of England and Wales was 35,358,896; the total population of Scotland, 4,785,598; the population of Ireland, taking into account the movements of the military, 4,337,000. The table below shows by divisions the area, the population present according to the censuses of April 1, 1901, and April 3, 1911, and the average density per square mile in 1911:

	Sq. m.	*Pop. 1901*	*Pop. 1911*	*Dens.*
England *	50,874	30,818,043	34,045,290	669
Wales	7,466	1,714,800	2,025,202	271
Scotland	30,405	4,472,103	4,760,904	156
Gr. Britain...	88,745	37,004,946	40,831,396	460
Ireland	32,586	4,458,775	4,390,219	135
U. Kingdom..	121,331	41,458,721	45,221,615	373
Isle of Man....	227	54,752	52,016	229
Channel Islands.	75	95,618	96,889	1,292
Br. Isles.....	121,633	41,609,091	45,370,530	374

* Including Monmouthshire.

The population of England, Wales, and Scotland has steadily increased; the rural population of Scotland, however, is virtually stationary. For Ireland the 1841 census showed the maximum population. Census returns at different periods have been as follows:

	E. & W.	*Scot.*	*Ire.*	*U. K.*
1841....	15,914,148	2,620,184	8,196,597	26,730,929
1861....	20,066,224	3,062,294	5,798,967	28,927,485
1871....	22,712,266	3,360,018	5,412,377	31,484,661
1881....	25,974,439	3,735,573	5,174,836	34,884,848
1891....	29,002,525	4,025,647	4,704,750	37,732,922
1901....	32,527,843	4,472,103	4,458,775	41,458,721
1911....	36,070,492	4,760,904	4,390.219	45,221,615

Of the total population, the percentage in England in 1841 was about 56.1 and in 1911 about 75.3; Wales, 3.4 and 4.5; Scotland, 9.8 and 10.5; Ireland, 30.7 and 9.7.

In 1911, males in the United Kingdom numbered 21,946,495, and females 23,275,120 (1061 females to each 1000 males), distributed thus: England, 16,421,298 males and 17,623,992 females (1073 females to each 1000 males); Wales, 1,024,310 and 1,000,892 (977); Scotland, 2,308,839 and 2,452,065 (1062); Ireland, 2,192,048 and 2,198,171 (1003).

In England and Wales, the percentage of the population in urban districts in 1911 was 78.1, as compared with 77.0 in 1901 and about 50.2 in 1851. The urban population was 28,162,936, and the rural 7,907,556. There were in 1911 97 urban districts (counting the administrative county of London as one district) in England and Wales, with a population of over 50,000 each; the population of these districts was 17,251,009, or 47.8 per cent of the total. Estimated population of "Greater London" (693 square miles) in 1914, 7,419,704; administrative county of London (117 square miles), 4,518,021. The table below shows for the larger municipalities after London the estimated population in 1914:

Birmingham	860,591	Stoke-on-Trent ..	239.515
Liverpool	768,926	Salford	233,970
Manchester	781,830	Leicester	231,152
Sheffield	472,234	Cardiff	186.763
Leeds	457,507	Bolton	184,026
Bristol	361,573	Croydon	178.511
West Ham.......	294,476	Willesden	167.000
Bradford	290,642	Rhondda	156.000
Kingston-upon-Hull	287,472	Sunderland	152,436
		Oldham	150,055
Newcastle-upon-Tyne	271,523	East Ham	142.905
		Birkenhead	135.789
Nottingham	264.970	Blackburn	134,015
Portsmouth	241,748	Brighton	133.186

In Scotland, estimated burgh populations were as follows in 1915: Glasgow, 1,072,793; Edinburgh, 326,901; Dundee, 178,574; Aberdeen, 164,307; Paisley, 88,717; Leith, 81,178; Greenock, 77,695; Coatbridge, 44,612; Motherwell, 41,741; Kirkcaldy, 40,796.

In Ireland, the estimated population of Dublin (with suburbs) in 1914 was 406,000; Belfast, 399,000. The county borough of Cork had in 1911 76,673 inhabitants; Londonderry, 40,780; Limerick, 38,518.

The table on the following page shows the total number, together with the rate per thousand of population, of births, deaths, and marriages in each division of the United Kingdom. The figures for marriage rate represent not the number of marriages but the number of persons married per thousand of population.

In 1914 and 1915 respectively, illegitimate births in England and Wales numbered 37,329 and 36,245; in Scotland, 8879 and 7875; in Ireland, 2943 and 2953.

The table below shows for various years the number of passengers that arrived in or left the United Kingdom from or for countries out of Europe, distinguishing British and aliens (the last column shows the number of British passengers from and for the United States):

		British	*Aliens*	*Total*	*U. S.*
Arrivals	1905.	122,712	77,908	205,198	61,373
"	1910.	164,139	184,640	298,779	58,623
"	1913.	227,643	144,975	372,618	77,014
"	1914.	229,870	130,022	359,892	77,171
"	1915.	129,652	17,537	147,189	47.296
Departures	1905.	262,077	188,422	459,662	122,370
"	1910.	397,848	221,011	618,859	132.192
"	1913.	469,640	232,051	701.691	129,169
"	1914.	293,204	158,234	451,438	92,808
"	1915.	104,919	21,588	126,507	37,763

* In 1905, 4573 arrivals and 9163 departures were not distinguished as either British or aliens.

Public Education. See preceding Year Books. The compilation of statistics of school attendance in England and Wales is suspended during the war.

Years	England and Wales Number	England and Wales Rate	Scotland Number	Scotland Rate	Ireland Number	Ireland Rate	United Kingdom Number	United Kingdom Rate
			Births					
1910	896,962	25.1	124,059	26.2	101,963	23.3	1,122,984	25.0
1913	881,890	24.1	120,516	25.5	100,094	22.8	1,102,500	24.1
1914	879,096	23.8	123,934	26.1	98,806	22.6	1,101,836	23.9
1915	814,614	*22.0	114,181	23.9	95,583	22.0	1,024,378	*22.2
			Deaths					
1910	483,247	13.5	72,268	15.8	74,894	17.1	630,409	14.0
1913	504,975	13.8	73,069	15.5	74,694	17.1	652,788	14.3
1914	516,742	14.0	73,557	15.5	71,345	16.8	661,644	14.4
1915	†562,253	‡15.7	81,631	17.1	76,151	17.6	720,035	*15.6
			Marriages					
		§		§		§		§
1910	267,721	15.0	30,902	13.0	22,112	10.1	320,735	14.3
1913	286,583	15.7	33,691	14.3	22,266	10.2	342,540	15.0
1914	294,401	15.9	35,049	14.8	23,695	10.8	358,145	15.3
1915	360,885	*19.5	36,272	15.2	24,154	11.1	421,311	*18.3

* Based upon the estimated population in 1914. † Including deaths of non-civilians. ‡ Based upon civil deaths and civil population. § These figures represent the number of persons married per thousand.

AGRICULTURE. Estimated yield of some of the principal crops in 1916 and 1917, in bushels:

		England & Wales	Scotland	Ireland
Wheat	1916	54,681,000	2,264,000	2,827,000
"	1917	57,317,000	2,432,000	4,573,000
Barley	1916	43,174,000	5,176,000	6,537,000
"	1917	46,162,000	5,640,000	7,508,000
Oats	1916	95,534,000	36,224,000	58,686,000
"	1917	99,717,000	43,576,000	89,094,000
Potatoes	1916	93,105,000	19,824,000	90,718,000
"	1917	124,278,000	41,440,000	155,035,000
Turnips & swedes	1916	484,722,000	220,155,000	....
"	1917	454,109,000	300,605,000	....
Mangolds	1916	274,085,000	1,643,000	....
"	1917	316,645,000	1,938,000	....

Figures in the foregoing table are subject to revision. The food situation caused by the great war has proved an unprecedented stimulus to British and Irish agriculture. The scarcity of male labor necessitated to a greater degree than ever before the use of machinery, especially the tractor for plowing; and it is not unlikely that for the most part the cultural methods thus forced upon the people will remain permanent. In England in 1917 tractor plows placed in cultivation large areas of grass lands that had not been turned in perhaps half a century. Preliminary returns indicated a greater agricultural development in Ireland in 1917 than in Scotland. In 1917 Ireland had over 47,000 acres more under wheat than in 1916, about 27,000 acres more under barley, about 392,000 acres more under oats, and about 123,000 acres more under potatoes. In 1915 the Irish acreage under flax was 53,143, in 1916 about 91,000, and in 1917 special efforts were directed toward increasing this crop.

The total area under cultivation in the United Kingdom (including the Isle of Man and the Channel Islands), as reported for the first week of June, 1915, was 46,675,407 acres, as compared with 46,763,816 acres in 1914. The cultivated area in 1915 was distributed as follows: Great Britain, 31,834,497 acres; Ireland, 14,719,688; Isle of Man and the Channel Islands, 121,222. The following table shows the total acreage under principal crops in 1915, the production in 1914 and 1915, and the yield per acre in 1915 (the figures for acreage include, while those for production exclude, the comparatively small returns of the Isle of Man and the Channel Islands):

	Acres 1915	Production 1914	Production 1915	Per Acre
Corn Crops		Bushels	Bushels	
Wheat	2,335,091	62,482,825	73,914,840	31.7
Barley	1,524,816	64,525,424	46,897,948	30.8
Oats	4,182,296	165,308,299	178,467,163	42.9
Rye	60,040	......	....	...
Beans	278,016	8,960,627	7,398,238	28.0
Peas	130,307	2,992,303	2,402,704	24.4
Total	8,505,006			
Green Crops		Tons	Tons	
Potatoes	1,214,458	7,476,458	7,540,240	6.3
Turnips and swedes	1,625,589	24,195,755	24,481,088	15.1
Mangolds	499,804	9,522,921	9,696,499	19.5
Other	536,501	......	......	...
	3,876,352			
Hops	34,744	*507,258	*254,609	*7.3
Hay				
Rotation grasses, etc.	2,849,602	4,210,924	4,526,192	1.6
Permanent grasses	6,399,530	8,192,555	7,922,591	1.2
Total hay	9,249,132	12,403,479	12,448,783	

* Cwt.

Farm live stock in June, 1915, and 1916, with percentage of increase: horses, 1,711,858 and 1,834,215 (increase 6.2 per cent); cattle, 12,171,452 and 12,451,540 (2.3); sheep, 28,275,970 and 28,849,655 (2.0); swine, 3,795,131 and 3,615,891 (decrease 4.7 per cent). See AGRICULTURE.

MINING. In 1915 persons employed at mines numbered 973,473, of whom 766,542 males worked under ground and 199,270 males and 7661 females above ground. By far the most important mineral mined is coal, and the most important metal is iron. The coal output in 1916 was about 255,850,000 tons, as compared with 253,206,081 tons in 1915. Counties having the larger shares in the 1915 output were: Yorkshire, 40,357,917 tons; Durham, 33,737,985; Glamorgan, 33,110,247; Lancashire, 21,405,832; Derbyshire, 16,652,123; Lanarkshire, 15,393,799; Monmouthshire, 14,224,795; Staffordshire, 13,353,364. Spot value of coal raised in 1915, £157,830,670, as compared with £132,596,853 in 1914. For production of iron ore and metals, see the 1916 YEAR BOOK.

SEA FISHERIES. Wet fish (exclusive of salmon and shell fish) reported as landed on the coasts of the United Kingdom in 1915 amounted to 8,637,665 cwts., valued at £9,776,-

729; in 1914, 18,155,126 cwts., £11,228,829; in 1913, 24,657,116 cwts., £14,229,311. The value of shell fish landed in 1915 was £389,174; in 1914, £401,812; in 1913, £463,642. The haddock catch in 1914 and 1915 respectively was valued at £1,645,759 and £2,337,128; cod, £2,321,617 and £2,131,470; herring, £2,115,899 and £1,632,368; hake, £685,416 and £310,265; mackerel, £223,138 and £267,300; whiting, £397,462 and £379,608; mackerel, £223,138 and £267,300; sole, £359,386 and £228,859.

COMMERCE. In respect to the figures of imports and exports since August, 1914, the accounts of goods imported do not include certain goods which, at the time of importation, were the property of the British Government or the governments of the other Allies. The accounts of goods exported include goods bought in the United Kingdom by or on behalf of the governments of the other Allies, but do not include goods taken from government stores or goods bought by the British Government and shipped on Government vessels. The table below shows total imports, imports reëxported, and net imports (that is, imports for home consumption). The figures here given are exclusive of specie and bullion, of foreign merchandise transshipped under bond, and of diamonds from the Union of South Africa.

	Total Imports	*Reëxports*	*Net Imports*
1911	£680,157,527	£102,759,134	£577,398,393
1912	744,640,631	111,737,691	632,902,940
1913	768,734,739	109,575,037	659,159,702
1914	696,635,113	95,474,166	601,160,947
1915	851,893,350	99,062,181	752,831,169
1916	948,506,492	97,566,178	850,940,314

Total exports, reëxports (exports of foreign and colonial produce), and domestic exports (exports of British and Irish produce) have been valued as follows (exclusive of specie and bullion and of foreign merchandise transshipped under bond):

	Total Exports	*Reëxports*	*Dom. Exps.*
1911	£556,878,432	£102,759,134	£454,119,298
1912	598,961,180	111,737,691	487,223,439
1913	634,820,826	109,579,037	525,245,289
1914	526,195,523	95,474,166	430,721,357
1915	483,930,629	99,062,181	384,868,448
1916	603,845,885	97,566,178	506,279,707

In 1914 imports and exports of gold and silver specie and bullion amounted to £70,595,001 and £41,488,125 respectively; in 1915, £21,388,527 and £46,578,689.

The following table shows total imports of merchandise, valued in thousands of pounds:

	1914	*1915*	*1916*
FOOD, DRINK, AND TOBACCO.	296,969	380,875	419,167
Non-dutiable	221,463	290,657	321,284
Grain and flour..........	79,636	112,358	133,253
Wheat	44,734	57,306	72,013
Barley	5,660	6,030	10,411
Oats	4,674	8,489	6,545
Maize	11,761	18,902	19,898
Wheatmeal and flour..	5,549	8,311	8,568
Rice	2,576	5,293	6,920
Meat	62,222	86,839	94,051
Bacon	18,226	25,441	34,382
Hams	3,068	5,280	6,841
Beef, fresh and frozen	19,063	25,840	23,347
Mutton, fresh & frozen	11,410	14,102	13,408
Pork	2,663	1,010	1,169
Butter	24,014	27,023	18,964
Cheese	7,966	11,107	12,946
Eggs	8,653	6,123	4,742
Fish	5,674	7,761	10,608
Fruit	11,779	12,146	13,000
Lard	4,751	5,783	6,983
Margarine	3,977	5,751	8,983
Vegetables	5,539	5,572	6,508
Dutiable	68,048	81,668	90,518
Cocoa	4,217	8,450	9,229
Coffee	3,549	4,937	4,728
Dried fruit	3,285	1,035	6,109
Condensed milk	2,085	2,098	2,085
Spirits	1,790	2,720	4,239
Refined sugar	15,613	12,720	12,459
Unrefined sugar	16,505	19,092	24,909
Tea	14,221	19,579	17,745
Wine	3,630	2,917	3,512
Tobacco	7,463	8,550	7,364
RAW MATERIALS AND ARTICLES MAINLY UNMANUFACTURED	236,531	286,570	336,792
Iron ore	5,487	7,544	12,136
Other metallic ores.....	9,533	11,574	13,680
Wood and timber.......	25,343	32,788	40,164
Raw cotton	55,351	64,672	84,730
Wool	34,247	44,147	39,731
Other textiles	15,368	21,023	23,840
Oilseeds, oils, etc.......	41,332	49,669	63,357
Hides and skins..........	12,727	13,959	13,785
Paper-making materials..	5,958	6,152	8,135
Miscellaneous	31,143	35,031	37,228
ARTICLES WHOLLY OR MAINLY MANUFACTURED	160,490	181,450	189,194
Iron and steel..........	10,877	10,806	11,214
Other metals	29,604	42,216	39,048
Cutlery, hardware, etc...	5,194	4,929	5,703
Electrical goods	1,243	1,096	1,653
Machinery	6,712	8,848	7,988
Wood and timber........	2,337	2,325	1,927
Cotton yarn and mfrs...	9,373	7,555	8,309
Woolen yarn and mfrs...	7,648	1,725	923
Silk	13,393	14,638	13,149
Other textiles	7,353	9,043	11,203
Apparel	4,253	2,956	2,731
Chemicals, drugs, dyes, etc.	12,064	19,329	28,622
Leather and mfrs.*	13,478	17,034	16,189
Earthenware and glass...	2,994	2,176	3,053
Paper	6,791	6,647	8,327
Motor cars	7,267	9,145	5,994
Miscellaneous mfrs.	19,875	20,826	23,147
Parcel post	1,924	2,999	3,354
Total imports	696,635	851,893	948,506

* Excluding boots and shoes.

Exports of merchandise, produce of the United Kingdom, have been valued as follows, in thousands of pounds sterling:

	1914	*1915*	*1916*
FOOD, DRINK, AND TOBACCO..	26,949	25,082	29,495
Grain and flour.........	8,095	3,859	2,775
Meat	1,139	1,343	1,242
Beer and ale...........	1,769	1,937	3,134
Biscuits and cakes.......	1,293	1,175	1,752
Herrings	2,341	915	1,676
Spirits	3,995	3,724	5,133
Tobacco	3,708	3,792	4,766
RAW MATERIALS	56,713	52,354	64,345
Coal, etc.	42,202	38,824	50,671
Wool	4,469	3,846	3,682
Oilseeds, oils, etc.......	3,962	5,392	4,600
Hides & undressed skins.	1,483	891	1,528
ARTICLES WHOLLY OR MAINLY MANUFACTURED	338,634	292,927	393,398
Iron and steel..........	41,668	40,406	56,674
Other metals	10,283	9,702	12,720
Cutlery, hardware, etc...	6,512	5,060	6,447
Electrical goods	3,019	3,169	4,084
Machinery	31,363	19,165	20,218
Ships, new	6,933	1,698	1,291
Wood manufactures	1,564	1,241	1,277
Cotton yarn	11,973	10,315	13,429
Cotton piece goods......	79,175	64,692	88,788
Other cottons	11,135	10,076	14,835
Woolen yarn and mfrs...	34,960	32,840	43,649
Silk	1,866	1,700	2,406
Other textiles	12,982	11,714	15,818
Apparel	14,532	11,604	16,941
Chemicals, drugs, dyes, etc.	19,508	22,069	27,565
Leather and mfrs.*	4,685	3,798	4,898
Earthenware and glass..	4,148	3,298	3,918
Paper	3,186	2,995	5,195

	1914	1915	1916
Carriages, carts, etc.	11,230	6,578	8,038
Miscellaneous	80,389	30,177	40,701
Parcel post	7,101	14,506	18,206
Total domestic exports	430,721	384,868	506,280

* Excluding boots and shoes.

The value of domestic exports in eleven months of 1917 was reported at £488,168,477, as compared with £466,351,247 in the corresponding period of 1916 and £350,920,929 in that of 1915.

Wheat imports in 1914 amounted to 103,926,743 cwt.; in 1915, 88,667,900; in 1916, 100,070,320. Of the latter amount, 64,544,100 cwt. were from the United States, 21,551,000 from Canada, 5,611,900 from India, 4,495,700 from Argentina, and 3,699,620 from Australia. Imports of wheatmeal and flour in 1914, 10,060,223 cwt.; in 1915, 10,482,170; in 1916, 9,960,325. Leading imports for home consumption in 1914 and 1915 respectively: Wheat, 103,245,748 and 88,488,693 cwt.; wheatmeal and flour, 9,838,903 and 10,066,335; maize, 37,499,833 and 45,837,969; rice, rice meal, and flour, 5,998,717 and 10,338,697; butter, 3,893,029 and 3,806,743; margarine, 1,520,462 and 2,049,137; cheese, 2,380,277 and 2,677,854; raw cocoa, 55,832,547 and 90,204,089 lb.; fresh and refrigerated beef, 8,223,028 and 8,238,907 cwt.; fresh and refrigerated mutton, 5,113,131 and 4,651,028; bacon and hams, 5,836,475 and 7,772,242; sugar (in equivalent of refined), 32,836,751 and 32,119,082; tea, 317,478,084 and 316,813,863 lb.; cotton, 1,647,869,800 and 2,303,978,100 lb.; wool, 421,635,102 and 811,505,193 lb. The total cotton import in 1915 was 2,647,616,100 lb., of which 2,022,385,900 lb. from the United States and 448,490,800 lb. from Egypt. The total wool import in 1915 was 934,495,242 lb., of which 426,163,648 lb. from Australia, 200,031,839 lb. from New Zealand, 136,565,278 lb. from British possessions in South Africa, 88,677,709 lb. from South America, and 65,432,255 lb. from British India.

Some of the exports (produce of the United Kingdom) in 1914 and 1915 respectively: cotton yarn, 178,496,800 and 188,169,200 lb.; cotton piece goods, 5,735,744,500 and 4,748,452,900 yds.; woolen tissues, 81,996,700 and 92,330,600 yds.; worsted tissues, 70,304,400 and 55,769,500 yds.; jute yarn, 34,706,800 and 36,732,100 lb.; jute piece goods, 134,743,100 and 109,156,200 yds.; linen piece goods, 178,893,200 and 128,776,400 yds.; oil cloth, 43,602,400 and 30,900,300 sq. yds.; spirits, 10,103,096 and 8,912,750 proof gals.; manufactured tobacco and snuff, 34,899,549 and 36,179,465 lb.; coal (exclusive of bunker coal), 59,039,880 and 43,534,560 tons; wool, 38,458,000 and 32,002,900 lb.; iron and steel and manufactures thereof, 3,884,153 and 3,196,983 tons.

The table below shows the total imports of merchandise consigned from and the total exports of merchandise consigned to the principal countries, in thousands of pounds sterling.

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
United States	237,774	291,835	56,514	64,541
British India	62,214	72,366	46,899	54,365
Canada	40,989	58,529	16,033	21,583
Argentina	63,876	51,594	12,111	14,565
Australia	45,190	36,178	31,868	39,132
New Zealand	30,408	31,627	10,119	12,923
Egypt	21,791	26,606	8,560	11,843
France	31,428	26,586	81,229	107,597
Spain	18,864	25,034	7,453	10,187
Netherlands	23,419	22,139	30,476	32,982
Denmark	22,894	21,942	12,138	14,224
Sweden	19,802	20,606	10,160	8,906
Dutch Colonies	.....	19,082	.....	8,678
Russia	21,425	18,252	24,897	34,331
Norway	13,690	16,659	9,852	12,258
Straits Settlements	20,004	16,015	4,444	5,484
Switzerland	15,252	15,510	4,101	5,623
Cuba	8,244	13,052	2,749	2,858
Japan	9,879	12,494	5,179	7,953
Chile	9,585	12,409	2,017	4,375
Italy	11,258	11,243	17,627	23,992
Ceylon	12,197	10,730	2,070	2,896
T'l, incl. others	851,893	948,506	483,931	603,846

SHIPPING. The net tonnage of British and foreign vessels (exclusive of the coasting trade) entered and cleared at the ports, with cargo and in ballast, was as follows in 1914 and 1915:

			Entered	
		Sail	*Steam*	*Total*
British	1914	306,505	40,050,730	40,357,235
"	1915	267,283	28,283,666	28,550,949
Foreign	1914	1,221,705	29,547,522	30,769,227
"	1915	1,190,218	23,614,734	24,804,952
Total	1914	1,528,210	69,598,252	71,126,462
"	1915	1,457,501	51,898,400	53,355,901
			Cleared	
		Sail	*Steam*	*Total*
British	1914	234,265	38,068,906	38,303,171
"	1915	263,827	25,999,222	26,263,049
Foreign	1914	1,083,752	29,576,153	30,659,905
"	1915	1,219,728	23,659,533	24,879,261
Total	1914	1,318,017	67,645,059	68,963,076
"	1915	1,483,555	49,658,755	51,142,310

The tonnage of vessels employed by the Government in connection with the war is not included in the foregoing table. Shipping by nationality is shown below, in thousands of tons net:

	Entered		*Cleared*	
	1914	*1915*	*1914*	*1915*
British	40,857	28,551	38,303	26,263
Norwegian	5,670	7,469	5,672	7,505
Danish	3,169	3,349	3,187	3,377
Dutch	3,521	3,120	3,507	3,133
Swedish	2,918	2,597	2,899	2,594
French	2,339	2,426	2,359	2,406
Spanish	1,738	1,704	1,755	1,644
Greek	1,240	1,305	1,240	1,447
Belgian	1,230	678	1,132	703
Russian	861	601	818	522
Italian	895	601	902	601
American	771	570	778	570
German	5,390	5	5,393	...
Total, incl. others	71,126	53,356	68,963	51,142

At the end of 1914 and 1915 respectively, the number of vessels, with net tonnage, comprising the British merchant marine was as follows: sail, 8203 vessels, of 793,567 tons, and 8019 vessels, of 776,761 tons; steam, 12,682 vessels, of 11,621,635 tons, and 12,771 vessels, of 11,650,349 tons; total, 21,065 vessels, of 12,415,202 tons, and 20,790 vessels, of 12,427,110 tons.

Number and net tonnage of vessels (other than war vessels) built in the United Kingdom in 1914 and 1915 respectively: sail, 281 vessels, of 29,107 tons, and 158 vessels, of 12,942 tons; steam, 858 vessels, of 1,006,065 tons, and 394 vessels, of 397,212 tons; total, 1139 vessels, of 1,035,172 tons, and 552 vessels, of 410,154 tons.

In 1914, 129 merchant vessels, of 196,564 tons net, were built for foreign owners; in 1915, 30 vessels, of 35,708 tons net. In 1914, 327 merchant vessels on the British register, of 398,929 tons net, were sold to foreign countries; in 1915, 98 vessels, of 156,697 tons net. See NAVAL PROGRESS.

The situation at the close of the year 1917 was outlined as follows:

> "No complete figures are available as to the construction and destruction of shipping in 1917 as yet. On the basis of reliable estimates the net deficit created by the German submarines appears to be in the neighborhood of 1,000,000 tons gross. This figure is reached as follows:
>
> "The British Admiralty reported the loss of 717 ships of over 1600 tons gross and of 260 ships of less than that tonnage during the period beginning with the last week in February, 1917, and ending December 23. Estimating the size of the larger ships at 3800 tons and of the smaller at 1000 tons, the British losses aggregate 2,984,000 tons for this period and something more than 3,000,000 tons for the year.
>
> "Prior to February, 1917, British losses constituted about 60 per cent of the total tonnage destroyed. There is no reason to believe that this ratio materially changed. This means that the destruction of tonnage reached at the end of 1917 an aggregate of about 5,000,000 tons gross.
>
> "The shipyards of the Entente and of the United States are estimated to have accounted for an output during 1917 of 2,500,000 tons gross, making a total with the production of other nations of 3,000,000 tons. The difference between production and destruction, therefore, works out at 2,000,000 tons, against which must be set approximately 1,000,000 tons of German and Austrian ships seized by the United States and Brazil.
>
> "The task of the Allied shipbuilders is first to make good this deficit, while continuing to keep pace with U-boat destruction. After this has been accomplished the great need for additional tonnage must be met and the responsibility of supplying America's requirements rests solely on the United States. The other Allies will have enough to do to expand their merchant marines for their own needs."

See SHIPPING, and SUBMARINE OPERATIONS.

COMMUNICATIONS. On December 31, 1915, the length of railway line open to traffic in the United Kingdom was 23,709 miles; on December 31, 1914, 23,701 miles; which represented 55,663 miles of single track. Of the 23,709 miles of line open to traffic in 1915, 13,430 miles were of two or more tracks and 10,279 miles of single track. England and Wales had 16,418 miles of line (of which 11,007 miles double or more); Scotland, 3882 (1696); Ireland, 3409 (727). In consequence of special arrangements made in connection with the war, financial returns of the railways for 1914 and 1915 are incomplete, but the following figures are reported for those years respectively: total paid-up capital (including nominal additions), £1,341,220,000 and £1,347,312,000; average rate of dividend or interest, 3.52 and 3.53 per cent (on account of the nominal additions made to the capital, these rates are lower than they otherwise would be); gross receipts, £139,098,365 and £144,860,250; working expenses, £88,173,232; net receipts, £50,925,133 and £51,481,378; proportion of working expenses to gross receipts, 63 and 64. Gross receipts and working expenses in England and Wales in 1915, £124,117,292 and £80,470,368; in Scotland, £15,665,652 and £9,658,292; in Ireland, £5,077,306 and £3,250,212.

Length of tramway line and light-railway line at the end of 1914, 2703 miles, of which 2213 miles were in England and Wales, 317 miles in Scotland, and 173 miles in Ireland. See CANALS.

During 1917, the railways of Great Britain were run entirely with a view to military considerations, and with due regard to economies. A system of pooling freight cars came into force on January 2, 1917, while at the same time a number of simplifications in the systems of accounts and records pertaining to passenger goods and other traffic were instituted. In January, 1917, passenger rates were raised about 50 per cent, and the Irish railways which for two years of the war had been outside of the Government control were taken into it. The increase in passenger rates was not so much to increase revenue as to reduce the amount of traveling, so that the lines could be entirely at the disposal of the military authorities for the transport of troops and freight, especially munitions and supplies. In 1916 and 1917, rails and rolling stock were transported to France, and British railroad builders from Canada laid a number of important and useful lines, on which British rolling stock was operated by the Railroad Corps, recruited from practical British railroad men. In this way the army in France was aided, as rails could be torn up and relaid, and used rolling stock shipped across the Channel much quicker than material of this kind could be manufactured.

In their organization and operation on a war basis the railways of Great Britain continued to grow more efficient, although various shortages in equipment and particularly in rolling stock were felt. Some idea of the immensity of the operations can be appreciated by the fact that up to the end of 1915 "moves were made overseas of 100,000 officers, 2,586,000 other ranks, 542,000 horses." In the same period in addition to supplying various small camps, there were sent out to France "388,000 tons of food, 553,000 tons of forage, 59,000 tons of fuel, and 29,000 tons of medical stores; 17,338,000 gallons of petrol and 4,911,000 gallons of oil. 491,000 mail bags were carried and 14,000 tons of parcels. The total tonnage of stores shipped out to our army was also not inconsiderable and had as some of its principal items 184,000 tons of engineering stores, 131,000 tons of ordnance, 92,000 tons of clothing, 40,000 tons of sand bags, 27,000 tons of entrenching and camping equipment, 13,000 tons of barbed wire, 12,000 tons of tentage, as many of canteen, and as many of saddlery and harness." These figures for the war up to 1915 were exceeded in 1916 and in 1917, although there were no statistics available. This condition and the future of the British railways naturally was a matter of discussion, and president of the Board of Trade, Sir Albert Stanley, speaking to the Associated Society of Locomotive Engineers and Firemen, whose unions had been demanding an eight-hour day, said that "the present system of railways control would continue for some time after the war." This and other declarations aroused considerable interest in view of the changed economic and political conditions, although nothing definite was settled in this connection. One effect of state control, however, had been that the Government was forced to realize the existence of the trade unions, and had formulated negotiations with them with the result that trade unions increased in number and influence, and labor conditions were tending toward a situation that might be difficult in the future.

The year under review was marked by a number of operating economies and a decrease in service for the general public. Trains were reduced and the railways were authorized to refuse to carry luggage exceeding 100 pounds a passenger. Cheap fare facilities were withdrawn with the exception of workmen's tickets, season tickets, and other combinations. Dining and restaurant cars were withdrawn, and the collection and delivery service was curtailed. Traffic dispatched by passenger trains had to be prepaid and the regulations regarding demurrage on railway stock were rigorously enforced. In fact, various powers that would have been considered most extraordinary were assumed by the Board of Trade, and Great Britain virtually had an experience of Government operation.

On July 4, 1917, an important scheme was published by the controller of coal mines, whereby England, Wales, and Scotland were divided into twenty areas, so that each area would take its supplies from certain fixed districts of production, so that the consumption of coal would take place as near the producing mines as possible. It was estimated that this plan would result in saving of rail transport of not less than 700,000,000 ton miles annually, while the movement of coal was arranged in certain well-defined directions. This measure was taken to prevent the unfortunate conditions of the previous winter, due to the lack of coal in certain districts, and its irregular receipt in others. In the opinion of some critics, the question of privately owned freight cars which in many cases were hauled back empty was another serious element in the British railway situation that had not been removed in 1917.

There was practically no new railway construction or other work more than what was necessary for maintenance during the year, 1917, on account of the scarcity of labor and the necessary materials as well as other conditions due to the war.

On January 1, the Irish railways passed under the control of the Government to be administered by an Irish Railway Executive Committee in a manner similar to that of the British railways, while on March 1, the canals belonging to private companies were taken over by the Government and were to be operated in coördination and coöperation with the railways. The tendency towards Government ownership was marked further by the Government control of all tramway undertakings which were placed under the administration of a special committee; the object of this change was to facilitate the transportation of munition and other workers to and from places of employment and to cut down the unessential services as to seaside resorts.

During the year, there were various advances in wages to paid workers on British railways in response to demands. Thus on April 12, the men who received a war bonus of 10*s.* per week and boys having one-half of this amount, were granted an increase of 50 per cent, and on August 8, the bonus was converted into standard wages so that every day and Sunday duty could be calculated at a higher rate. A strike was authorized by the Associated Society of Locomotive Engineers and Firemen, numbering some 30,000 members, who wanted an eight-hour day, but the president of the Board of Trade in reply intimated that before the railways passed from the control of the Government at the end of the year, this and similar questions would be investigated, and at the same time, the matter of increased compensation was referred to the committee on production, which granted an extra 5*s.* Other employees asked for a revision of wages and an additional 6*s.* was awarded, which was increased by another shilling by the committee on production. At the end of the year, all men received an extra 21*s.* per week, all youths 10*s.* 6*d.*, all women over 18 years old, 8*s.* 6*d.*, and all girls under 18 years, 4*s.* 3*d.* See LABOR.

One of the evils of the lack of national standardization was shown in the war work of the British railways. These railways had not been organized either on the military basis of the Germans and other continental nations, or on the other hand, so as to secure interchangeability of equipment, such as was practiced on American lines. Accordingly, there were three kinds of brake arrangements, so that the rolling stock of the different companies could not always be made up into one train even after it had been decided to interchange the various cars, and to secure their through transportation. Furthermore, on these lines, width of the rolling stock and the interval between the different tracks varied at times, so that in making up trains, the officials had to use unusual care.

FINANCE. The legal standard of value is gold. The monetary unity is the pound sterling. Par value of the pound sterling, $4.86656; exchange value, October 1, 1917, $4.755. In years ended March 31, revenue (receipts into the exchequer) and expenditure (issues out of the exchequer chargeable against revenue) have been as follows, in thousands of pounds sterling:

	1912-13	*1913-14*	*1914-15*	*1915-16*	*1916-17*
Rev. ..	188,802	198,243	226,694	336,767	573,428
Exp. ..	188,622	197,493	560,474	1,559,158	2,198,113

For the year ending March 31, 1918, estimated revenue, £638,600,000; estimated expenditure chargeable against revenue, £2,290,381,000; estimated deficit, £1,975,000,000. Details of estimated revenue, 1917-18: customs, £70,750,000; excise, £34,950,000; estate duties, etc., £29,000,000; stamps, £8,000,000; land tax, £650,000; house duty, £1,950,000; income tax (including super-tax), £224,000,000; excess profits duty (including munitions levy), £18,000,000; additional taxation, £20,000,000; land value duties, £400,000 (total tax revenue, £569,700,000); postal service, £24,200,000; telegraph service, £3,250,000; telephone service, £6,250,000; crown lands, £600,000; sundry loans, etc., £7,500,000; miscellaneous, £27,100,000 (total non-tax revenue, £68,900,000); total revenue, £638,600,000.

Details of estimated expenditure chargeable against revenue, 1917-18: national debt (inside the permanent or fixed annual charge), £17,000,000; national debt (outside the permanent or fixed annual charge), £194,500,000; payment to local taxation accounts, etc., £9,700,000; other consolidated fund services, £1,695,000 (total consolidated fund services, £222,895,000); army, navy, and ministry of munitions, £33,000 (nominal, the full expenditure being included in the last item, votes of credit); old age pensions, £12,200,000; labor exchanges, insurance, etc., £8,542,000; education and other civil services, £40,482,000 (total civil services, £61,224,000); customs, excise, and inland revenue, £5,249,000; post office services, £25,980,000 (total supply services, which include civil services, £92,486,000; votes of credit (for military and naval operations, etc.), £1,975,000,000; total, £2,290,381,000.

The total national expenditure from August 1, 1914, to December 22, 1917, was reported at about £6,250,000,000; of this, £1,472,000,000 was raised by revenue, the remainder by various borrowing operations.

At the end of 1917 the British national debt was increasing at the rate of at least £1,000,000,000 every six months. At the end of the fiscal year 1917, that is, on March 31, the estimated gross liabilities of the state were about £3,900,000,000. The gross liabilities as officially reported for March 31, 1916, were £2,197,439,245, consisting of the following: funded debt, £318,460,277; estimated capital liability in respect of terminable annuities, £26,158,871; unfunded debt, £1,796,129,496; other capital liabilities, £56,960,601. Excepting this last item, these liabilities constitute the so-called dead-weight debt, amounting on March 31, 1916, to £2,140,748,644, as compared with £1,108,817,076 on March 31, 1915, and £651,270,091 in 1914.

Toward the end of 1917 the total cost of the war to the United Kingdom from August, 1914, to April, 1918, was estimated at £6,292,000,000. It was believed that the votes of credit in the fiscal year 1917-18 would exceed the budget estimate (£1,975,000,000) and reach the sum of £2,300,000,000. Votes of credit from August 6, 1914, to October 30, 1917, were as follows, in fiscal years:

Votes of Credit	£
1914	
Aug. 6	100,000,000
Nov. 25	225,000,000
1915	
Mar. 1	87,000,000
Y'r 1914-15	362,000,000
1915	
Mar. 1	250,000,000
June 15	250,000,000
July 20	150,000,000
Sept. 15	250,000,000
Nov. 11	400,000,000
1916	
Feb. 21	120,000,000
Y'r 1915-16	1,420,000,000
1916	
Feb. 21	300,000,000
May 23	300,000,000
July 24	450,000,000
Oct. 11	300,000,000
Dec. 14	400,000,000
1917	
Feb. 12	200,000,000
Mar. 15	60,000,000
Y'r 1916-17	2,010,000,000
1917	
Feb. 12	350,000,000
May 9	500 000,000
July 24	650,000,000
Oct. 30	400,000,000
Part of y'r 1917-18	1,900,000,000
T'l to Oct. 30, 1917	5,692,000,000

Average daily cost of the war to the United Kingdom, in 1917: April 1 to May 5, £7,457,000; April 1 to June 9, £6,723,000; April 1 to October 27 (unofficial calculation), £6,411,000.

Government. The Liberal ministry of Herbert Henry Asquith, which came into power April 8, 1908, was succeeded May 25, 1915, by a coalition ministry, in which Mr. Asquith retained the premiership. On December 7, 1916, David Lloyd George accepted the post of prime minister, continuing as such through 1917. Near the end of 1917 the ministers who constitute the cabinet were as follows: Prime Minister and First Lord of the Treasury, David Lloyd George; Lord High Chancellor, Baron Finlay; Ministers Without Portfolio, Viscount Milner, George N. Barnes, Sir Edward Carson, and Lt. Gen. Jan C. Smuts; Lord President of the Council, Earl Curzon (the foregoing formed the "War Cabinet"); Lord Privy Seal, Earl of Crawford; First Lord of the Admiralty, Sir Eric Geddes; Secretary of State for Home Affairs, Sir George Cave; Secretary of State for Foreign Affairs, Arthur James Balfour; Secretary of State for the Colonies, Walter Long; Secretary of State for War, Earl of Derby; Secretary of State for India, Edwin S. Montagu; Chancellor of the Exchequer, Andrew Bonar Law; Minister of Munitions, Winston Spencer Churchill; President of the Air Board, Baron Rothermere; President of the Board of Trade, Sir Albert Stanley; President of the Local Government Board, W. Hayes Fisher; President of the Board of Education, Herbert A. L. Fisher; President of the Board of Agriculture and Fisheries, Rowland E. Prothers; Chief Secretary to the Lord Lieutenant of Ireland, Henry Edward Duke; Postmaster-General, Albert Illingworth; Secretary for Scotland, Robert Munro; Chancellor of the Duchy of Lancaster, Sir Frederick Cawley; First Commissioner of Works, Sir Alfred Mond; Attorney-General, Sir Frederick Edwin Smith; Minister of Blockade, Lord Robert Cecil; Minister of Labor, George H. Roberts; Pensions Minister, John Hodge; Food Controller, Baron Rhondda; Shipping Controller, Sir Joseph P. Maclay; Director-General of National Service, Sir Auckland Geddes; Reconstruction Minister, Christopher Addison.

See Aëronautics; Financial Review; Fire Protection; Food Control; Strikes; Tariff; Taxation; Textile Industry; Trade Unions.

History

The Opening of Parliament. Parliament was opened by the king on February 7, but without the usual ceremony. Instead of the customary robes and regalia the king came in his uniform, as Admiral of the Fleet, and his example was followed by the other dignitaries. In the king's speech he said that the response of the Allies to the American president's invitation had outlined their war aims as far as possible.

National Service Bill. There had been long discussions of the need of a comprehensive plan for National Industrial Service, and on February 6, the measure was introduced requiring all men between the ages of eighteen and sixty-one to be enrolled. Volunteers also were to be asked to engage in any trade that might be assigned to them at a minimum wage of twenty-five shillings a week. The director-general of the service, Mr. Neville Chamberlain, was to have a position in the ministry. In the course of debate on it on February 22, the Government gave their assurance that they had no intention of shutting down the unessential trades entirely. It proposed that after a certain date no further laborers between the ages of seventeen and sixty-one should be engaged in such trades without the assent of the director-general. The Government wanted offers from those engaged in essential as well as those in the unessential trades. Down to that time there had been 60,000 offers of service in the New Industrial Army. It was decided that the best policy was not to put a penalty clause in the bill, but to put both the volunteers and the employers on their honor. Industrial compulsion, the Government argued, could not be introduced under the bill, and to remove all misgivings the Government gave the assurance that they would not use the powers that Parliament conferred on them for

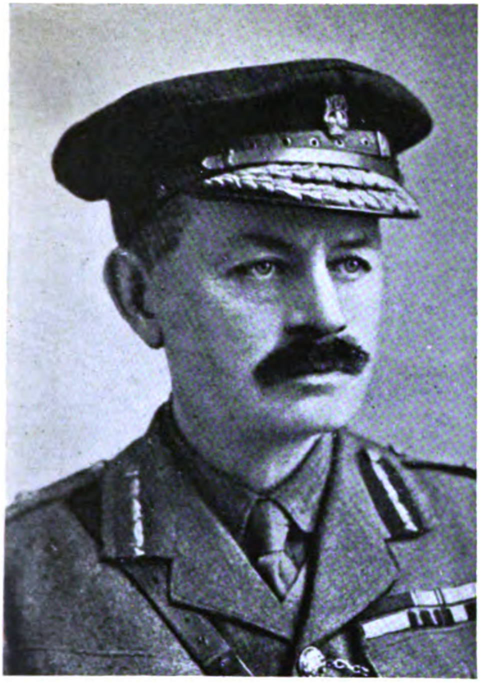
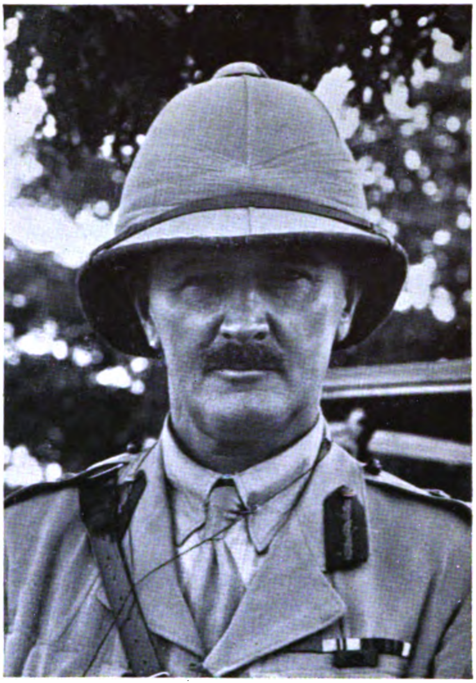
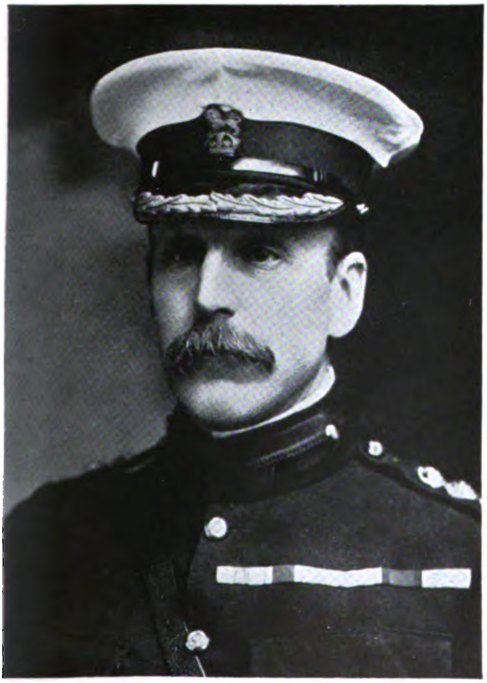


Photo from Paul Thompson

LIEUTENANT GENERAL SIR JULIAN BYNG
In Command of the Third Army on the Western Front



GENERAL SIR E. H. H. ALLENBY
In Command of the British Troops in Palestine



LIEUTENANT GEN. SIR FREDERICK STANLEY MAUDE
Died, November 18, 1917

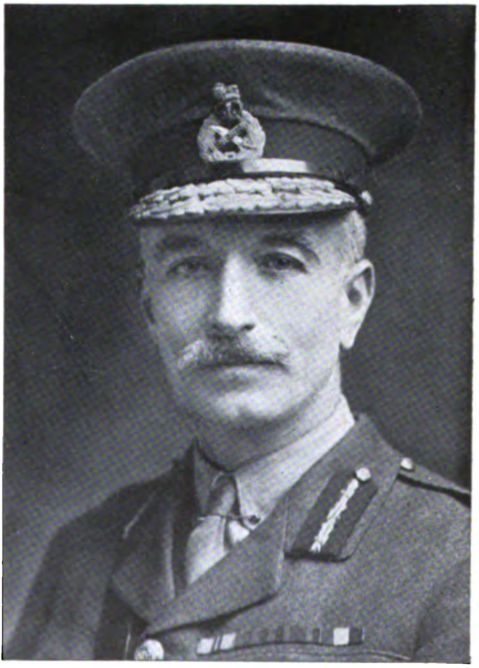


Photo by the International Film Service

LIEUTENANT GENERAL SIR W. MARSHALL
Succeeding General Maude in Command
of the British Forces in Mesopotamia

FOUR BRITISH GENERALS PROMINENT IN 1917

making any change not sanctioned by present legislation without going to Parliament for special authority. The bill was passed in March. Working men in general accepted it, despite their fear of industrial conscription.

ENEMY ALIENS. On February 14 there was a debate in Parliament on the question of enemy aliens. A member declared that German life in London continued to be as it had been two years before, that there were German restaurants, German notice boards, etc., in the heart of the city. He referred to Germans who were carrying on business without interruption and said he had observed in one establishment that nearly one-third of the employees were German. He wanted to know why 4294 enemy aliens, including 287 of military age, had not been interned. To this Sir George Cave replied that it now would be necessary to reconsider all the cases of enemy aliens who were still at large and that it was his intention to find out how many of those who had not been interned were able to work. It would be furthermore necessary to consider in future the exclusion after the war of suspected aliens of England and Great Britain.

CONSCIENTIOUS OBJECTORS. For the enforcement of compulsory military service a tribunal was created in order to deal with conscientious objectors, that is to say, to test the validity of their pleas. It was said that due regard was paid to those who objected on religious grounds and that all had a chance to prove their sincerity. The others were placed in detention camps for the purpose of seeing how serious their objection was. The average sentence was for 112 days, after which the objector was released, and if he again refused to do the work of national importance required by a military authority he was sentenced for the original length of time and forty-two days besides, the term increasing with each new offense. A large majority of the men who had been objectors were found afterwards to be at work on matters of national importance.

PARLIAMENTARY SESSION. On April 18 both Houses adopted resolutions expressing the appreciation of the British nation for the course taken by the United States in entering the war. On the previous day the House of Commons had passed the second reading of the bill for the extension of the life of Parliament by a vote of 286 to 52. Parliament was to remain in existence until November. The chief opponents were the Nationalists on the ground that no solution of the Home Rule problem had been found. John Dillon, the spokesman of the Nationalists, declared that they would oppose the measure at every stage. Mr. Bonar Law, spokesman for the Government, said that the Government earnestly desired a settlement and hoped that a better spirit would prevail. See below *Irish Question.*

THE BUDGET. The new budget was introduced on May 2. There had been expectations of new taxes, and none were introduced, but there were increases of three existing taxes. The chancellor of the exchequer had decided that it was too difficult to create the machinery required for new taxation. The principle that had obtained throughout was still respected, namely, that revenue aside from loans must show a balance over what would have been permanent charges if war expenditure did not exist. Therefore the tax had to provide enough revenue to make up for the increased charges as a result of further borrowings. The income tax was not increased. The taxes that were increased were the entertainments tax, the tobacco duty, and the excess profits duty, which in the opinion of financial critics generally seemed the right ones for the purpose. The increases were not heavy. The extra amount on entertainment tickets was to be no higher than a penny or two pence, and the increase on tobacco was only 1*s.* 10*d.* a lb. It was estimated that the former would raise one and one-half millions and the latter six millions of revenue. The excess profits tax was to be raised from 60 per cent to 80 per cent on profits over the standard of the time before the war. It was estimated that this would yield an extra twenty millions. For budget estimates for 1917-18 see above under *Government.*

ELECTORAL REFORM. The conference appointed in 1916 to draw up a plan of electoral reform reported to the House of Commons in March and a bill founded upon this report was introduced on May 15th. This made very radical changes in the qualifications for the franchise and provided for woman suffrage (see below). Progress was made on it during the year. It passed its third reading in the House of Commons on December 7 and was under discussion by the Lords at the close of the year.

WOMAN SUFFRAGE. On June 19 the House of Commons voted the principle of Woman Suffrage by a majority of 330 out of 440. There was a debate in which the main points on the opposite side were that the present house had no real right to introduce such a measure; that women had not suffered from the lack of the vote; that women were averse to taking strong measures; that the measure was based on a false view of what women ought to do; and that their proper sphere was in domestic and local affairs. These arguments were not taken seriously and in general the debate brought out no important points. See WOMAN SUFFRAGE.

THE IMPERIAL WAR CABINET. Plans for a war conference were announced early in January. It was decided to invite the prime ministers of the Dominions of London. They were to become temporary members of the war cabinet and to take part in the discussion of all measures affecting the Dominions, the conduct of the war, and the negotiations of peace, having the same weight in the council as the British ministers themselves. This was a departure from precedent, for until recently the Dominion ministers were not even admitted to the meetings of the Imperial Cabinet.

The Imperial War Cabinet held its first meeting in Downing Street on March 20. It was to serve as an Executive cabinet for the empire and was invested with responsibility for the decision of all matters pertaining to the war, including, of course, all questions of foreign policy; also all matters pertaining to the ultimate settlement and to the conditions following the war. The representatives from the over-sea dominions and India were as follows: Canada, Sir Robert Borden (Prime Minister), Mr. Robert Rogers (Minister of Public Works), and Mr. J. D. Hazen (Minister of Marine); India, Mr. Chamberlain (Secretary of State for India), advised by Sir James Meston (Lieut.-Governor of Agra and Oudh), Sir S. P. Sinha (the first

Indian member of the Viceroy's Executive Council), and the Maharaja of Bikanir (representing the Ruling Chiefs); Newfoundland, Sir Edward Morris (Prime Minister); New Zealand, Mr. W. F. Massey (Prime Minister), and Sir Joseph Ward (Minister of Finance); South Africa, General Smuts (Minister of Defense); Australia was not represented at the first meeting on account of the inability of the Premier, Mr. Hughes, to be present. See AUSTRALIA, *History*.

The matters that came up before it were in some instances of a confidential nature and could not be made public. Certain of the resolutions, however, were published. One of the most important of these was that in regard to the constitution. It declared that an improvement in the constitutional relations of the different parts of the empire was needful, but that it should not be undertaken during war time. A special Imperial conference should be summoned as soon as possible after the war. The basis of such a readjustment should be the admission of the Dominions and India to a share in foreign policy and foreign relations, while preserving all their present powers of self-government. It should provide effective arrangements for constant consultation on matters of common Imperial concern. Other important resolutions related to the means of developing Imperial resources. The conference expressed its support of the principle that each part of the empire while having due regard to the interests of the Allies should give specially favorable treatment to the products of other parts of the empire, and that arrangements should be made for inducing those who intended to emigrate from the United Kingdom to choose places under the British flag; that the safety of the empire required that special attention be paid to the production and transportation of a sufficient food supply, to the control of national resources within the empire, especially those which are necessary for national purposes, and to the use of these resources by manufactures carried on within the empire. The conference urged the Government to carry through the necessary legislation to this end. Specifically it was proposed that there should be established in London an Imperial mineral bureau in which the self-governing parts of the empire should be represented. The conference approved the increase of the Board of Trade service and its extension throughout the empire and it recommended that the governments concerned should coöperate in the effort to develop inter-Imperial trade. It favored a uniform policy throughout the empire in regard to naturalization. In the matter of defense, the conference resolved that the Admiralty should be asked to work out after the end of the war the most effective scheme of naval defense to be submitted for consideration to the governments concerned; and emphasized the importance of developing a sufficient production of naval and military material in all parts of the empire and of assimilating as far as possible the military stores and equipment throughout the empire. It recommended that an expert committee representative of all parts of the empire should be appointed as soon as possible to consider the various standards and principles.

Indian Cotton Question. The duties on cotton imports to India caused much discontent in Lancashire. The free traders took a hand in the controversy that arose. The main points in it were as follows. The Indian Customs Tariff was abolished in 1882 owing chiefly to the demand of Lancashire. In the nineties, however, a general tariff of 5 per cent upon imports was introduced in India, whereupon Lancashire objected and the Government compelled India to impose a countervailing excise upon certain cotton yarns produced in India mills. Not long afterward all cotton yarns were exempted from duty, but a special low import duty of 3½ per cent was imposed upon woven cotton and an equivalent excise upon cotton goods woven in Indian mills. From this time (1896) the Indian cotton duties remained on this basis which was, of course, very favorable to Lancashire. In 1916 the revenue from opium having disappeared the import tariff of India was increased from 5 per cent to 7½ per cent, but neither the excise nor the cotton import duty was changed. The government of India then sought permission to raise cotton import duties to 7½ per cent, leaving the excise duty unchanged. The Asquith Government refused this on the ground that they wished to avoid contentious questions. When India, however, offered of her own accord to contribute £100,000,000 for the cause of the war Mr. Lloyd George's Government consented to allow the increase on the cotton import duty. In India the cotton excise duty had caused great discontent not only on account of the damage done to the native industries, but especially on account of the spirit of the measure, which seemed particularly unfair. The opponents of the duties argued that it was a pure and simple protection against the products of India; that moreover Lancashire did not really need this excise duty, for the competition of the Bombay mills with the Lancashire ones included only a part of the goods sent to India.

Stockholm Conference. The Labor party held a special conference in London on August 10 to decide the question of sending delegates to the Stockholm conference. The result was a strong vote in favor of this course on condition that the conference be advisory, and not binding. The votes represented were as follows: For sending delegates—1,846,000 against 550,000; majority—1,296,000. It repeated its decision before adjourning on August 21, but by a majority of only 3000, owing to the change of the miners' votes, numbering about 600,000, which now were cast against the conference. Meanwhile the Government had refused to grant passports. On September 4 the Trades' Union Congress at Blackpool declared by a vote of 2,849,000 to 91,000 against the international conference at Stockholm "at the present moment," but at the same time demanded an international labor conference as a necessary measure before concluding peace. To bring about such a conference it was necessary first to promote a general agreement in aims among the working classes and the parliamentary committee was instructed to take all possible measures to that end.

Labor Party. Toward the end of October a programme was made public for the reconstitution of the Labor party. The chief changes were: The provision for individual membership instead of enrollment of trade councils, etc., exclusively as heretofore; the establishment of a local Labor party in each constituency, with separate sections for men and women; the in-

SIR ROBERT L. BORDEN
Canada

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W. F. MASSEY
New Zealand

GENERAL SMUTS
Union of South Africa

GENERAL BOTHA
Union of South Africa

FOUR COLONIAL STATESMEN PROMINENT IN 1917

crease of the National Executive from a membership of sixteen to twenty, including four women; the statement of the objects of the party in a more specific way. Among the objects now put forth were that of promoting the interests of all producers "by hand or by brain" without distinction of occupation. This was taken as an indication that a vigorous campaign would be carried on by the Labor party at the next general election. Its leaders estimated that the new electoral measure would add about 8,000,000 to the electorate, of whom 6,000,000 would be women.

IRISH QUESTION: RÉSUMÉ. Aside from Great Britain's part in the war, which is treated in the article WAR OF THE NATIONS, the Irish question absorbed more attention during the year than any other. For the better understanding of it, the course of events since the rebellion of 1916 will be briefly reviewed. While order was outwardly restored after the suppression of the rebellion, there was everywhere evidence of irritation, anger, and uncertainty. The Castle Government having been wrecked, the Asquith Ministry set itself the task of building up a new régime which should be more equitable. To that end as noted in the preceding YEAR BOOK, Lloyd George was sent to Ireland to act as a messenger of peace and to ascertain the means of reorganization. The pacification of the parties seemed almost impossible on account of the division between the men of Ulster and the Nationalists, and the irreconcilable attitude of the Sinn Fein. The last-named, though conquered, was regarded as a party of martyrs and elicited a certain sympathy among the people at large. It seemed impossible to found a government on these shifting sands. Lloyd George began by trying to bring together Redmond and Carson and he drew up a scheme that was to confer immediate Home Rule upon Ireland while excluding the six counties of Ulster. This was to be a temporary arrangement which should be revised after the war at an Imperial conference. As soon as this plan was known it became the target for critics of all parties. Some declared it would break the truce which since the beginning of the war the parties had concluded with one another and would put a premium on rebellion. To others the compromise meant the dismemberment of the empire. Yet, it was necessary to act promptly, for affairs were going from bad to worse. Martial law was still in force, and according to many had no other effect than to turn more and more people into Sinn Feiners. During the summer of 1916 the spirit of revolt was openly manifested. Seditious emblems were displayed; officers and soldiers were insulted; and even the republican flag reappeared. Mr. Lloyd George pursued his course, begging everybody to lay aside his personal preferences for the sake of the country, and he finally won over to his programme the party chiefs and the dissenters. The conventions of the majority and minority elements finally voted for the Lloyd George arrangement, though with the least possible enthusiasm. Nevertheless, the point was carried. It now remained to bring the English parties to accept the plan. Here there was danger of failure. The Coalition Government had seemed always to arrive at its conclusions too late. In this instance it exasperated people not only by its delay, but by taking back a part of what it had granted. At the demand of some members of Parliament and to maintain its own unity it had given out that it would reduce the Irish representation at Westminster after the next elections. Again, Lord Lansdowne had launched a thunderbolt in an aggressive speech in which he spoke of the need of serious alterations in the Home Rule arrangement. Then, what was even worse, there was disagreement as to the plan for excluding Ulster, that is to say, whether that exclusion should be temporary or permanent. The bitterness of party spirit seemed to increase at the very moment when compromise was attempted. The Ulster Unionists blamed the Nationalists for exploiting the public peril in their own interests and the Nationalists accused Ulster of sheer, senseless obstinacy. The chiefs of the Irish Nationalists found their authority on the wane. At first they had insisted that Home Rule should be imposed without regard to the minority and now, in accepting the exclusion of Ulster, they agreed to a plan that permitted the minority to check the majority. They were thus in the awkward position of having agreed to an arrangement which they themselves had denounced as the dismemberment of Ireland. The Sinn Fein came more and more into evidence. It began to express its hopes, prepare its programme, and glorify openly the chiefs of the rebellion as saints and martyrs. There was chosen as president of the Gaelic League one Sergeant MacNeil, then in prison, of whom a young priest in his pulpit exclaimed that he would rather be in his place than King of England. Moral anarchy was gaining ground and the Government seemed committed to the policy of hands off. However, there was a limit to that policy. The Government appointed Mr. Duke, a Unionist, as successor to Mr. Birrell, and a little later Lord Wimborne of the former Government reappeared as Lord Lieutenant. Thus the Castle régime, which Mr. Asquith had said was ruined, was set up again. In all this the policy of Mr. Asquith was criticized as that of "Wait and see," and he was called a political Micawber.

Another important aspect of the problem was the draft issue. The rebellion had begun by drying up the sources of voluntary recruiting. The losses at the front were heavy and Ireland still abounded in men fit for military duty and, in fact, excellent material for soldiers. From the north of Ireland recruits continued to come but not from the west or south. Out of the male population of the island it was estimated early in 1917 that there were about 600,000 men fit for service, of whom 200,000 or 300,000 could be recruited and every day it was more necessary to fill the gaps in the ranks of Irish regiments. The question was whether, if the men refused, it would be necessary to force them into the army, that is to say, to impose upon Ireland the draft, which England, Scotland, and Wales had acccepted. This was the subject of long and bitter controversy during the entire autumn of 1916 and the winter and summer of 1917. The Unionists had no doubt on the point. They thought the safety of the country was more important than the loss of freedom and demanded immediate compulsion. Some favored putting this out as an ultimatum or a bargain: No conscription, no Home Rule. Others, having the same end in view, but more sympathetic, insinuated that compulsion might be the best and quickest means of fusing the two races into that unity which was the dream of the Irish Nationalists. The death of Maj. Redmond, who had fallen at Messines while fighting by the side of the Ulstermen had had a considerable sentimental influence, as indicating the unity brought about by fighting in a common cause. With the exception of the Sinn Fein, the Irish did not repudiate the cause of the Allies and they wished to win the war, but they held that Ireland, though insulted and ignored, had done its duty splendidly and pointed to the fact that it had already furnished 160,000 men, not counting the Irish immigrants who had gone over seas and who had formed so large a part of the Australian, Canadian, and New Zealand contingents. Mr. John Redmond in a letter to the *Times* declared that in the army and navy together there were 173,772 Irishmen from Ireland alone and that from 20 to 25 per cent of the troops from over seas were of Irish blood. In short, the Irish race, according to him, was represented in the war by not less than half a million men. He contended that their exploits were overlooked in the official reports. Other arguments of the Nationalists were: That conscription would introduce the Prussian military caste system among the Irish people; that if there were to be conscription it should only be imposed by a national Parliament and not by the Parliament at Westminster which was a foreign institution; that it was unfair to impose it on Ireland when it had not been imposed on Canada; and, in general that it would be the height of folly to introduce it at the hands of a Government which had postponed Home Rule to the disgust of the whole people of Ireland, crushed the rebellion with violence, and restored the old Castle régime. There would arise, they said, in every village a civil war and they characterized the conscription movement as a trick to discredit the political future of Ireland. On the other hand appeal was made to the supreme duty of winning the war and of saving Ireland from herself, for her present course would result, after the war, in her shame and isolation. When her own sons at the front were calling upon her for assistance she ought not to refuse. Refusal also would cause the loss of her friends over-seas. These appeals had been in vain. In the House of Commons Mr. Redmond had introduced a vote of censure on behalf of the Nationalists to the effect that the Government now maintained in Ireland contradicted the very principles for which the Allies were fighting, namely, the liberation of oppressed nations, and was responsible for the misfortunes of the country, and that every attempt to impose the draft upon Ireland would encounter the active resistance of the party and of the people. The obvious need of men at the front, however, as it became more and more pressing, placed Mr. Redmond in an embarrassing position. He could not reconcile his duty toward the empire with the rights of Ireland. He rejected conscription, but undertook, in return for the immediate granting of Home Rule, a campaign for voluntary enlistment. Nothing came from this campaign. On the other hand England did not dare enforce conscription. The secretary of state, Mr. Duke, himself admitted that any attempt to impose conscription forcibly upon Ireland in her present humor would lead straight to disaster. The Government was in the dilemma of choosing between the necessity of supplying troops at the front and the necessity of maintaining peace at home. This was the problem before Lloyd George, who was chosen above all because of his supposed fitness as a war minister.

Discussion of the Irish Question. There was a debate on the Irish question in the House of Commons on March 7, which ended in the withdrawal of Mr. Redmond and his followers from the House. The point in question was the demand of the Nationalists for an immediate settlement on the basis that Ireland should receive at once the grant of the free institutions which had long been promised to her. The Government was urged to turn over a new leaf in its relations with Ireland and to make some arrangement with the Nationalists, who, it was said, would go to any length to meet the objections of Ulster. On the other hand the representative of the Ulster Unionists declared that under no circumstances would they consent to go under a Home Rule Parliament. Finally the prime minister outlined the policy of the Government. He said that the fundamental facts in his opinion were that the centuries of ruthless injustice on the part of the British had filled the Irish with an inveterate hatred, whereas in the northeastern part of Ireland the people were as hostile to Irish rule as the Irish were to British rule. There were two questions then: (1) Whether the Government was prepared to grant self-government to Ireland; and (2) whether it was prepared to defy the opposition of the northeastern portion of Ireland. The Government was ready to do the first, but not the second. It wished to grant Home Rule to that part of Ireland which plainly demanded it, but it did not wish to take any action to enforce Home Rule in the part of Ireland that detested it. To bring out the Government's point the prime minister moved an amendment which declared any settlement to be welcome which did not involve the coercion of any part of the Irish people. This was received with jeers by the Nationalists. The prime minister further declared that the only practicable method was to call in some outside authority and entrust it with the work of adjusting the interests concerned. He suggested that the presence of distinguished dominion statesmen in England at that time might offer the means of doing this. Then followed a speech by Mr. Redmond in which he bitterly criticized the Government and characterized the prime minister's policy as temporizing. He warned the country of the prospect of a revolutionary uprising in Ireland and charged the Government with playing directly into the hands of the revolutionists. On the conclusion of his speech he appealed to his colleagues to leave the House and when he departed he was followed by sixty Irish members, who shouted and cheered as they went. On March 8 the Nationalist party met in the House of Commons under the chairmanship of Mr. Redmond and issued manifestoes to the President of the United States and the prime ministers of the Dominions, in which they declared their unqualified support of the war to its successful ending and their uncompromising opposition to the Government.

On April 14 Parliament met again after the

Photo by Paul Thompson, N. Y

DAVID LLOYD GEORGE
Prime Minister

SIR ERIC GEDDES
First Lord of the Admiralty

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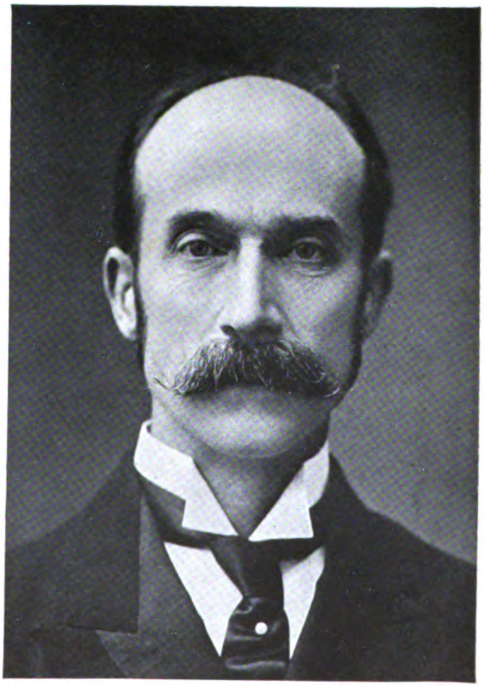
BARON RHONDDA
(David A. Thomas)
Food Controller



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MARQUIS OF LANSDOWNE

FOUR MEN PROMINENT IN GREAT BRITAIN IN 1917

Easter recess and the Government secured the second reading of the bill to prolong the life of the present Parliament. It was opposed by Mr. Dillon on behalf of the Irish Nationalists. He declared that his party was unanimously in favor of a general election. When the vote was taken it was found that only fifty-two votes were cast by the Nationalists against the 286 which were cast for the bill. At this time the prospects of an agreement on a measure for Home Rule were not promising. The Government did not seem to be able to form a plan and the Ulster Unionists showed no signs of weakening. The effect of America's entry into the war was to dishearten the extreme elements and it was hoped that that would lessen their power to do harm. On April 12 the Irish conference committee made certain overtures at Dublin Castle toward a Home Rule compromise. On April 13 the general assembly of Irish County Councils had its annual meeting in Dublin, passing a resolution that any project which should exclude any portion of Ireland would cause the greatest discontent among Irishmen throughout the world. In general there was a tendency to bring increasing pressure to bear upon the Government for immediate action.

Much was made of sentiments quoted from the newspapers and from prominent men in dominions over-seas and in the United States. In Australia the Senate by a vote of 28 to 2 passed a resolution in favor of Home Rule. In Canada, Cape Province, and the United States the press discussed the question with much feeling and found the solution in Home Rule. They all seemed to believe in the healing effect of self-government and all invoked their own example—the United States, the pacification that followed the Civil War; South Africa, the turning of rebels into loyalists after the Boer War—the transformation of a Botha and a Smuts into defenders of the empire. As to the United States Lord Brice declared that until the Irish problem was solved there could not be a really cordial union between Great Britain and America.

On Easter Monday, the anniversary of the rebellion, some disorders occurred at Dublin and Cork. The flag with the republican colors (green and yellow) was hoisted by the Sinn Fein on the ruins of the post office and many appeared in the streets with crêpe on their arm and the rosette of the Sinn Fein. The riot, though unimportant, called attention to the number of young men of military age who were idle.

On April 19 at the Mansion House at Dublin a meeting was held at the instance of Count Plunkett consisting of 500 delegates of the Sinn Fein, Gaelic leagues, and Nationalist parties, including many young priests. This meeting they called "the first convention of the Irish people upon the native soil." Its object was to proclaim Ireland a free nation and to assert her rights to be represented at the peace conference after the war. Lloyd George finally saw that the time had come when temporizing must cease, that continuation meant not only the shame of the empire but its danger. He resumed his conferences with the moderate members of both camps, who, taken together, constituted the majority.

The Irish Situation in May: Mr. Lloyd George's Proposal. The question of form was extremely difficult. It was necessary to decide whether the excluded area should be limited to the four Protestant counties or include also Tyrone and Fermanagh with their Catholic majority, whether, in other words, it should be at the option of the counties or, as they put it, "clean cut." The essential condition for the immediate granting of Home Rule was the exclusion of Ulster. This plan was checked at once by the protest on May 7 of the eighteen Roman Catholic bishops and of the three bishops of the Church of Ireland in an appeal addressed to the Irish people against either the permanent or the temporary partition of Ireland. Three days later in the election of South Longford in the stronghold of Nationalism the Sinn Feiner triumphed over the Constitutionalist by thirty-seven votes. The young men had rallied to the radical side, while their fathers voted for the Constitutionalist. Not all who rallied to the Sinn Fein, however, were republicans. Many were simply discontented and voted with it as a protest against the present order of things. Yet a definite stage had been reached. The principle of neither coercion nor partition was generally accepted and never before had the desire for a peaceful settlement been so strong. The extremists were in a small minority. All the rest wished once and for all to bury the Irish spectre. Another element in favor of a settlement was the fact that Ireland had never before been so prosperous. This pointed to the conclusion that the feeling was moral or sentimental rather than based on economic grounds. The fundamental fact was that Ireland knew and felt herself to be a nation and now that the spirit of liberty was abroad in the world her hopes were revived. Lord Cecil remarked to the consternation or amusement of Parliament, "There is no way of transferring Ireland to another country, and sometimes I regret it." Lloyd George now published a letter to the chiefs of the two great Irish parties, in which he offered a new solution: To Nationalist Ireland he offered immediate Home Rule, from which were excluded the six counties of Ulster. Then between the two Irelands he suggested the establishment of a national council consisting of delegates from each, who would deal with the common affairs and above all maintain the moral unity of the country which was provisionally cut in two. This council was nicknamed "the Bridge over the Boyne." This plan failing, he proposed as an alternative a convention of Irishmen of all parties and faiths for the purpose of drafting for their country a constitution which should put an end to the unfortunate disorders from which it had too long suffered.

The chief provisions of the Government plan, which was sent to the Nationalist leader, Mr. Redmond, on May 16, were as follows: Its purpose was to secure an immediate settlement, which should concede the largest possible measure of Home Rule without prejudicing later arrangements. In the first place a bill was to be introduced for the immediate application of the Home Rule Act to Ireland with the exception of the counties of northeast Ulster; this to be subject to reconsideration by Parliament at the end of five years unless it was brought to an end by the action of the Council of Ireland. The bill was to provide for a Council of Ireland to be composed of two delegations: First, all members returned to Parliament from the excluded area, and, second, an equal number of members from the Irish Parliament. This Council should be called on the initiative of any six members. Its powers included first, private legislation for both included and excluded area; second, recommendation to the Crown that any act of the Irish Parliament should be applied to the excluded area; third, the incorporation under the Home Rule Act of the whole of Ireland, subject to the consent of the majority in the excluded area; fourth, recommendation of solutions of Irish problems. The Government believed that the financial arrangements of the Home Rule Act should be revised. It recommended that the bill be considered by a conference formed on the same lines as the recent conference on electoral reform. Mr. Redmond, speaking for the Nationalists, and Mr. William O'Brien, speaking for the Independent Nationalists, while declaring themselves utterly opposed to the specific scheme, strongly favored the plan for a convention. On May 21 the Government announced that it would immediately summon a convention in Ireland to draw up a plan for a constitution of the Government of Ireland and submit this plan to the British Government. The Crown was to nominate the chairman. The Government was ready to accept the responsibility for taking all the necessary steps towards securing the necessary legislation from the Imperial Parliament, if an agreement should be reached by the convention. The convention if it were to succeed must proceed with closed doors.

The Irish Convention. The southern Unionists soon showed an inclination to accept the proposal for a convention and the Ulster Unionists seemed on the whole well disposed. The Sinn Feiners, however, were intractable. At their National Council on May 23 they decided that they would accept the convention only on condition that it should be free to declare an Irish republic and that the British Government should pledge itself to ratify the decisions of the convention. It was estimated that about 30 per cent of the Irish Nationalists were Sinn Feiners, but it was not known how many of them sympathized with that action of the council. On June 11 the prime minister announced that invitations were about to be issued to a convention of 101 members. The Government was making special efforts to get representatives of the normal life of the country by requesting each county council and county bureau to send its chairman. The chairmen of the small towns and districts were then to be invited to send two members for each of the four provinces. The Church, it was expected, would be represented by four Roman Catholic bishops, the Primate and the Archbishop of Dublin representing the Protestant Church and the moderator of the Irish Presbyterian assembly; and labor was to be represented by five delegates who were to be invited from the trade councils of Dublin and Cork and the trade unions of Belfast. As to political representatives these were to be in the following proportions: Nationalists, five members; Ulster Unionists, five members; O'Brienites, two members; Irish peers, two members; Southern Unionists, five members. The date fixed for the meeting of the new body was July 25. It assembled on that day at Trinity College, Dublin, the Right Honorable H. E. Duke presiding. Its proceedings were not made public and down to the close of the year its results were not known.

The Radical Element in Ireland. On June 15 the Government announced that all prisoners held as a result of the rebellion in Ireland would be released without reservation. It declared that it had satisfied itself that by this act of mercy the public security would not be endangered and it took this course in the hope that it would promote better feeling on the eve of the convention. This did not have the soothing effect anticipated. Rioting was reported in Cork on the return of the released prisoners, June 22, when windows were smashed and republican flags hoisted, and attacks were made on the jail. There was also rioting in the streets and the crowd attacked the recruiting office and pulled down the flags of the Allies. At last the mob began to use their revolvers and several policemen were injured. The military were then called out and machine-guns were mounted. The police charged and used their bayonets. It was reported that one was killed and thirty were wounded. These disorders following upon similar disorders in Dublin showed a spirit that was anything but favorable to the success of the convention.

A sign of increasing power on the part of the Sinn Feiners was forthcoming in the result of the East Clare election on July 11, which gave the Sinn Fein leader, Mr. De Valera, a vote of about 5000 as against a vote of about 2000 to his opponent, who was an official Nationalist. The policy on which Mr. De Valera ran for the office was absolute independence for Ireland; representation at the peace conference after the war; revolution if necessary, but only when England's difficulties gave rebellion a good chance of success; the repudiation of Ireland's share of the national debt; and the resolution to subdue Ulster if Ulster should resist the new government, provided that the Sinn Fein party succeeded in winning independence for Ireland. There was much comment on the fact that the Roman Catholic Church had so little effect in restraining the radicals. The clergy, it was said, paid no attention to the instructions of the bishops and revolutionary agitation was going on without encountering the opposition of the priests. In short, it seemed that a new generation in Ireland was being educated in republican ideas without any opposition on the part of the Church. At the Kilkenny election in August, the Nationalist candidate was defeated by a representative of the Sinn Fein. This was the fourth victory for the Sinn Feiners within a few months. Toward the end of October a Sinn Fein convention was held in Dublin and the well-known Sinn Feiner, Mr. De Valera, spoke openly on rebellion and the necessity of throwing off the rule of England. The convention did not result in any definite policy, but in general it pledged the party to the use of any and every available means for the destruction of British authority in Ireland, whether military aggression or peaceful penetration. The president declared himself in favor of physical force when the moment was favorable and the convention passed a resolution pledging the party's executive to an appeal to arms if in their judgment it seemed necessary.

An important debate took place in Parliament on October 23 in regard to the Government's course toward the Sinn Feiners. Mr. Redmond said that foolish arrests for making speeches that amounted to nothing and foolish measures of repression, together with the seizure of arms from the national volunteers and the harsh treatment of Sinn Fein prisoners, had greatly irritated public opinion and had had the effect of strengthening the cause of Sinn Fein. Mr. Duke, after pointing to the fact that the general course of the British Government toward Ireland had resulted in preserving that country from all the miseries of war, went on to say that the repressive measures were justified. Throughout Ireland young men who had not been drafted were enrolled in organizations that were hostile to the empire, for the purpose of starting a new rebellion, and that some of the men who had organized this movement were the very ones who had been released from prison. He characterized the conditions in Ireland as anarchistic. Later Mr. Lloyd George declared it to be the Government's firm intention to put down any movement toward rebellion. The Government could not overlook such matters as the making of seditious speeches, the manufacture of arms, and the drilling of men who, had they lived in Great Britain, would have been drafted. He pointed to the fact that Germany had nearly succeeded in landing arms in Ireland in 1916 and that since then arrangements had been made by Germans for another attempt.

An unfortunate incident at the end of September tended to promote the interests of the Sinn Feiners. Thomas Ashe, a national school teacher, prominently concerned in the Irish rebellion and subsequently in an attack upon the police in County Meath when several of the latter were killed, had been sentenced to death. Later the sentence was commuted to penal servitude for life. In the general amnesty of June he was released with others, but in August was again arrested and tried on the charge of attempting to excite disorder by a public speech. The sentence of the court martial was a year's imprisonment at hard labor and he was sent with other Sinn Fein prisoners to Mountjoy prison, where he and they went on a hunger strike. On September 28 Ashe was forcibly fed, but collapsed soon afterwards and died a few days later in the hospital. It was found that he had been suffering from a weak heart. His funeral was the occasion of a very impressive demonstration in the streets of Dublin, including a large procession in which various Sinn Fein clubs, Nationalist organizations, and representatives of political, civic, and language societies, trade unions, and women's leagues participated.

The inquest decided that he had died from heart failure caused by removal and forcible feeding while he was in a weak condition. The jury censured the Dublin Castle authorities for not having acted more promptly when the serious condition of Ashe was brought to their notice. The Ashe case irritated public sentiment and the Sinn Feiners renewed their agitation. Mr. De Valera continued to deliver speeches of a very radical character. He declared that Ireland was entitled to be free. His party, he said, could not agree with Mr. Redmond and Mr. Dillon because his party aimed at an independent republic. It was unfortunate that the world could not be ruled by moral force, but since arms were the only legitimate means of gaining freedom he advised the Irish volunteers to keep their powder dry. He said that if he himself were removed it would not check the movement, for there were thousands of Irishmen ready to take his place.

GREECE. A maritime kingdom in the southeast of Europe, situated in lat. 35° 40′-40° 10′ N. and long. 18° 20′ 25° 50′ E, between the Ionian and Ægean seas. It consists of twenty-six nomes, or departments, besides Crete and the new Turkish cession.

The capital is Athens. The country is composed of a continental portion, almost separated into two parts by the gulfs of Patras and Lepanto on the west, and the gulf of Ægina on the east; the archipelago of the Ægean Sea; and the Ionian Islands. The surface is nearly all mountainous; the coasts are elevated, irregular, and deeply indented.

AREA AND POPULATION. The area previous to the Balkan wars was given at 64,657 square kilometres (24,964 square miles), with a population in 1907 of 2,631,952. The area of the twenty-six nomes, and also of Crete, together with that of the new Turkish cession, is given as 120,057 sq. kilometres (46,345 sq. miles), and the population as 4,698,599. The majority of the people belong to the Greek Orthodox Church. Education is compulsory but is not well enforced and illiteracy is common.

Besides Crete, with an area of 8618 square kilometres, the area acquired from Turkey includes the insular districts of Lesbos, Samos, and Chios, the estimated area of which is 4018 square kilometres, and, on the mainland, the districts of Saloniki, Kozani, Florina, Serres, Drama, Janina, and Prevesa, aggregating about 42,760 square kilometres. In March, 1916, Greece took formal possession of Epirus (q.v.).

ECONOMIC CONDITIONS. Agriculture is the principal industry, though the methods are antiquated; the chief crops are currants, grapes, cereals, tobacco, citrus fruits, olives, and figs. In the Patras district the anticipated production for 1917 of olive oil totaled 100,000,000 pounds; olives for export, 4,000,000 pounds. Local wholesale price of oil, 24 cents per pound; olives, 14 cents. Owing to the great scarcity of food since the entry of Greece into the war, it was anticipated that a large part of the wine crop would be cut off on account of the increased consumption of grapes as a food in place of other sustenance. However, the vintage of 1917 is now estimated as greater in quantity than that of 1916, being reported at from 5,962,000 to 6,625,000 gallons.

The Greek legation made the following announcement March 11: "A ministry of supplies has been established in Greece to meet the necessities arising from the Allied blockade of Greek ports and the resulting difficulties of transportation of supplies for Greece. The minister of supplies has telegraphed the Greek legation in Washington to hasten the shipment of wheat for the relief of the starving population of Greece.

"All reports from Greece received by the Greek legation indicate that the suffering among the Greek people is beyond description. An epidemic of intestinal inflammation among children due to the quantity of bread to which the Greeks are reduced results in many deaths daily in the capital alone. The lack of coal has forced factories to suspend and the masses are suffering not only from hunger but dire poverty due to lack of work."

Political conditions in Greece were unsettled and trade was accordingly affected. Imports and exports were restricted; tonnage was scarce and freight rates were high; and interruptions to the telegraph and postal services caused much inconvenience. The Greek merchant marine prospered until steamship sailings were stopped altogether at the end of November. Notwithstanding the adverse conditions, some enterprises were very successful, bank deposits increased, and the agricultural, live stock, and wine industries, together with mines and quarries, profited from the high prices commanded by their products during 1916. Although labor was plentiful, owing to the arrival of refugees from Asia Minor and the Balkan States, who replaced men taking part in the mobilization, wages in continuing occupations advanced from 40 to 60 per cent above the 1915 level.

In December, 1916, prices of foodstuffs had increased from the corresponding month of 1915 as follows: Vegetables, 40 per cent; potatoes, 15 per cent; meats, 40 per cent; butter, 50 per cent; olive oil, 15 per cent; and cheese, 40 per cent. In some cases as much as $1 per pound was paid for white flour. The hotels and restaurants reduced the size of portions and added extra charges for covers, etc. Maximum prices were fixed by local authorities, but were frequently evaded.

The table at the foot of the page shows the mineral production of Greece for 1914 and 1915, the latest statistics available.

COMMERCE. The total value of imports into and exports from Greece for 1914 and 1915 (the latest figures available) by countries is shown in the following statement, values in thousands of dollars:

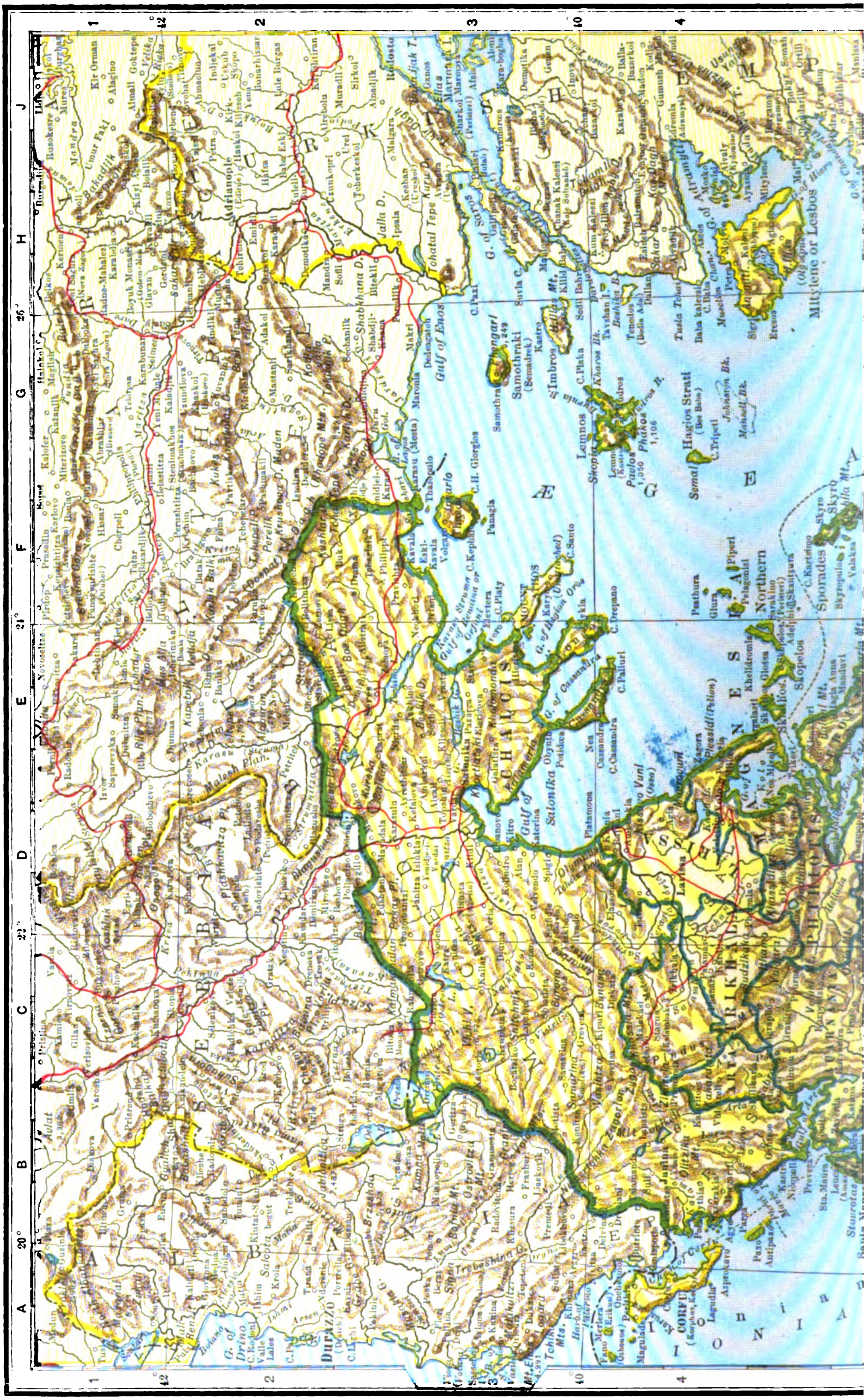
	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
America, North and South	2,684	14,209	8,346	2,989
Austria-Hungary	5,924	8,907	1,067	84
Belgium	496	29	781	34
Bulgaria	577	160	55	217
Egypt	313	564	1,986	4,187
England	9,232	7,449	7,287	9,183
France	2,165	2,364	1,845	2,295
Germany	2,690	859	1.525	1
Italy	1,794	1,946	2,805	2,906
Netherlands	766	700	1,790	8,865
Rumania	494	80	107	288
Russia	5,163	127	418	82
Switzerland	100	41	165	134
Turkey	905	149	268	14

In the following table are shown the total values of the principal classes of imports into Greece and exports from the kingdom for two years:

Imports	*1915*	*1916*
Agricultural products	$12,421,545	$19,821,903
Animal products	462,364	856,918
Chemical products & drugs	1,517,845	3,279,560
Cotton, yarns & fabrics	3,870,046	4,539,357
Esparto & hat-making materials	276,962	572,016
Fish & fish products	1,166,669	1,490,647
Forest products	1,456,685	1,399,941
Furniture, etc.	16,341	34,290
Glassware & pottery	246,095	264,043
Leather & mfrd. bones	374,656	885,073
Live stock	26,046	193
Metals & minerals:		
Crude	4,345,094	5,294,623
Manufactured	766.678	1,153,047
Instruments	96,375	187,017
Oil & oil substances	181,504	250,416
Paper products	790,548	1,513,861
Sugar & sugar products	1,593,715	3,267,351
Tanning materials	28,900	79,771
Wines & liquors	39,000	102,196
All other articles	636,941	712,830
Total	$30,314,009	$45,705,053
Exports		
Agricultural products	$14,405,281	$12,498,192
Animal products	1,865,431	1,832,328
Chemical products	358,062	71,357
Cotton yarns & fabrics	315,170	5,131
Fish & fish products	101,031	113,442
Forest products	880,610	579,605
Leather & mfrd. bones	76,812	944
Metals & minerals:		
Crude	2,762,917	2,300,159
Manufactured	214,185	238,683
Oil & oil substances	2,502,955	795,968
Paper products, etc.	7,243	7,853
Sugar & sugar products	14,082	1,154
Wines & liquors	3,212,688	1,952,507
All other articles	92,003	35,957
Total	$26,258,470	$20,433,280

The government prohibited the export of butter in 1916, and none was shipped; a similar restriction was placed on cheese, and the amount sent to the United States was only one-nineteenth of that in 1915. Salted fish, much of which used to come to Piræus from Dalmatian ports for transshipment, declined by two-thirds during the past year because of war conditions. The interruption of communication with the island of Chios, where nearly all the gum mastic exported through the Athens district is produced, caused a decrease in that item. No opium was

Minerals	*1914*		*1915*	
	M. tons		*M. tons*	
Raw ores:				
Chrome ore	7,059	$76,971	10,420	$79,184
Emery	16,112	191,306	14,338	385,765
Ferromanganese	1,815	24,355	1,041	13,220
Iron	299,286	507,594	157,840	139,162
Iron pyrites	120,046	423,388	12,113	66,389
Lead	151,581	19,635	104,905	20,349
Lignite	20,002	60,972	39,745	167,446
Magnesite	136,701	237,065	159,981	583,457
Nickel	13,626	86,607	20,577	49,147
Sulphur ore	81,110	.....	24,733	.....
Zinc	82,440	13,880	33,121	31,066
Furnace products:				
Lead in turtles	20,684	1,869,393	11,595	1,138.023
Magnesite:				
Calcined	25,219	411,587	23,130	438,939
Dead burnt	3,344	42,861	4,118	86,495
Zinc, calcined	22,308	251,065	20,209	330,059
Marble	2,251	109,669	877	55,398
Salt	29,717	707,642	16,856	1,165,476
Santorin earth	28,909	24,550	13,471	11,459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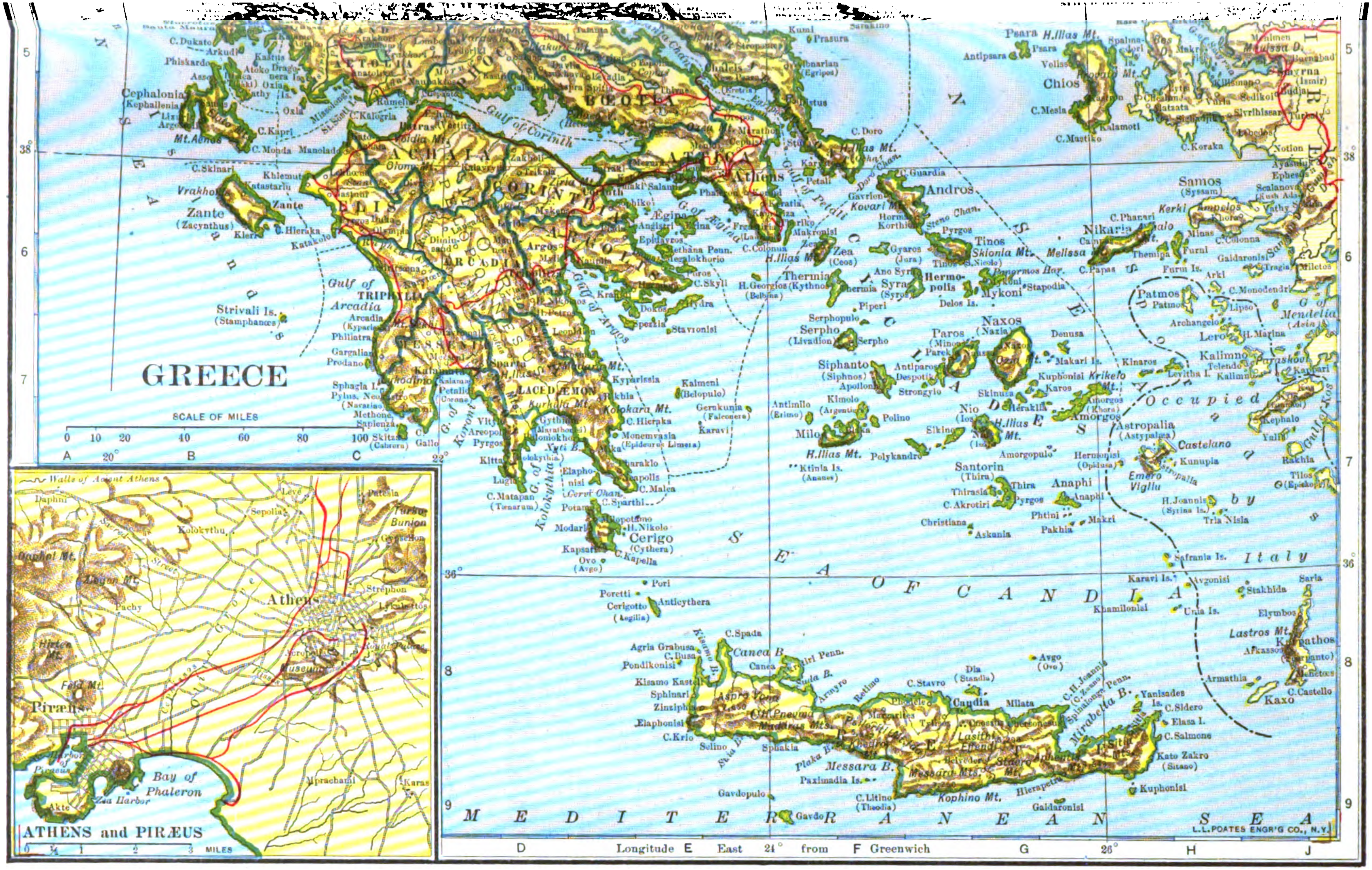
GREECE
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L.L.POATES ENGR'G CO., N.Y.
MEDITERRANEAN SEA
SEA OF CANDIA
Occupied by Italy
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Gulf of Argos
Gulf of Arcadia
G. of Ægina
Gulf of Petali
G. of Koroni
G. of Kolokythia
BOEOTIA
ATTICA
ACHAIA
CORINTH
ELIS
ARCADIA
ARGOLIS
MESSENIA
LACEDÆMON
Athens
Cephalonia
Zante
Strivali Is.
Cerigo
Andros
Tinos
Naxos
Paros
Milo
Santorin
Chios
Samos
Nikaria
Patmos
Kalimno
Astropalia
Castelano
Canea
Candia
Kaxo
Karpathos
Piræus
Bay of Phaleron
Zea Harbor
Walls of Ancient Athens
Daphni
Sepolia
Kolokythu
Patesia
Strephon
Lykabettos
Pachy
Mprachami
Akte
Karas

shipped. The Allied authorities control the export of emery, an abrasive important in the manufacture of munitions.

It is estimated that the provinces of Thessaly and Phthiotis produced in 1916 about 19,750,500 pounds of tobacco, which brought prices ranging from 41 cents to 55 cents per pound. Canned vegetables declined by nearly 60,000 pounds, but increased in value, owing to the scarcity of tonnage and the advanced cost of canning materials. Prices of native wines tripled in 1916; and, the production being diminished, Greece absorbed a large portion of its output. Liqueurs and brandy exports increased by 27,000 gallons.

SHIPPING. From its merchant marine Greece is estimated to have raised a net profit of 220,000,000 drachmas during 1916. In the merchant marine January 1, 1916, were included 329 sailings, of 85,750 tons, and 433 steamers, of 829,091. By decree of October 8 (O. S.), 1917, all Greek passenger vessels of 300 or more tons dead-weight capacity and all cargo vessels of 1000 or more tons dead-weight must be equipped with complete wireless installations of not less than 30 miles radius as soon as may be possible. After January 1-14, 1918, no Greek vessel falling within the divisions named above will be allowed to leave a Greek port unless fully equipped with wireless installation. Infraction of this rule to be punishable by fine and imprisonment.

The Greek Cabinet, January 20, discussed at length a British proposal to lease the Greek merchant marine. It was decided to take measures to assure the retention of the number of ships necessary to provide the foodstuffs which Greece requires. Two considerations already had put Greek ship-owners in the hands of the Entente, namely, coal and insurance. The latter, it was pointed out, might be secured in the United States, but the former, it was decided, was sufficient to induce owners to accede to the proposals of Great Britain. The Allied propositions were accepted, January 23, by the shipowners.

FINANCE. The Greek drachma has maintained an excellent position in the foreign exchange market. Its stability is accounted for by the establishment of Greece as a creditor nation in foreign financial centres and by the limitation of imports by foreign governments, which permitted Greece to purchase before the blockade only absolute necessities, chiefly wheat, rice, and some coal, and hence to avoid extraordinary expenses and the inauguration of any new enterprises.

The following figures show the gain in deposits in the leading banks from December 31, 1915, to December 31, 1916: National Bank of Greece, 346,500,000 to 397,000,000 drachmas: Bank of Athens, 56,500,000 to 64,000,000 drachmas; Commercial Bank of Greece, 13,500,000 to 24,500,000 drachmas; the Popular Bank, 28,500,000 to 34,000,000 drachmas; total increase, 74,500,000 drachmas.

Revised figures for the 1915 budget (including the new territories) are given below in thousands of drachmas:

Revenue	*1,000 dr.*	*Expenditure*	*1,000 dr.*
Direct taxes	60,539	Public debt	68,681
Indirect taxes ...	84,819	Pensions, etc. ...	16,754
Stamps and dues.	39,405	Civil list	2,500
Monopolies	18,231	Chamber of Dep..	946
State prop., rev..	14,137	Foreign affairs ..	5,415
State prop., sales.	1,065	Justice	11,483
New territories ..	2,000	Interior	21,839
Northern Epirus..	8,000	Communication ..	23,719
Various	8,754	Worship and Instruction	17,567
Total ordinary.	231,453	Com. and Ag....	5,951
Extraordinary ...	179,999	War	52,569
		Marine	22,756
Total	411,453	Finance	37,572
		Extraordinary ...	418,010
		Total	698,769

The foreign debt was reported December 31, 1916, at £45,863,692.

RAILWAYS. By a royal decree published in the government *Gazette* of November 7-20, 1917, the state assumes direction and management under the title "Greek State Railways" of the following railways and portions of systems already in operation: the Piræus-Demerli-Papapouli Railway, with its Chalkis and Stylidos branches; the Papapouli-Platy line with "junction line" from the bridge of Axios to that of Topsin; that portion of the Saloniki-Monastir Railway on Greek territory; that portion of the Saloniki-Skopia Railway on Greek territory; all of the Saloniki-Dedeagatch Railway on Greek territory.

The state railways will constitute a special branch of the government service under the Royal Ministry of Communications, which will constitute an administrative council composed of directors and suitable boards.

GOVERNMENT. Freed of her pro-German king, Greece, on June 29, severed relations with the Central Powers. By this action the government "considered war to exist," not regarding a formal declaration of war to be necessary. The ministry at the end of 1917 was made up as follows:

President of Council and Minister of War, Eleutherios Venizelos; Interior, Emmanuel Repoulis; Marine, P. Coundouriotis; Public Domain and Interior Colonization, A. Michalacopoulos; Finance, Mil Negrepontis; Public Instruction and Worship, A. Dingas; National Economy, G. Sideridis; Food Control, L. Embiricos; Minister for Assistance to Refugees, Sp. Simos; Foreign Affairs, N. Politis; Communications, A. Papanastassiou; Justice, J. Tsirimocos.

It was officially announced, January 1, 1917, that Earl Granville, counsellor of the British Embassy in Paris, had been appointed representative of the British Government to the provisional government of Eleutherios Venizelos at Saloniki, with the title of diplomatic agent. Following similar action on the part of Great Britain, the French government, January 3, appointed Robert de Billy, formerly counsellor of the French Embassy at Rome, as French diplomatic agent to the government set up by Venizelos.

Entente officials who were to administer the Allied control in Greece reached Athens, January 18. The arrivals included a British military mission headed by Gen. Phillips, and an Italian mission headed by the ex-chief of the Italian mission formerly charged with the reorganization of the Greek police.

HISTORY

DIFFICULTIES OF THE ALLIES WITH THE GOVERNMENT. The note of the Allies as narrated in the preceding YEAR BOOK was submitted to the

Greek government on December 31, 1916. It was immediately followed by expressions of irritation in the press, and by hostile demonstrations toward the Allies which the Greek government did not suppress. On January 2 the king conferred with a number of the pro-German ex-ministers. Meanwhile, there were loud demands in the streets for a rejection of the note and strong evidence of a wish to declare war against the Allies. Some suspected that the king and his prime minister, Lambros, favored war and that they were hoping Germany would come to their aid. Large numbers of the Venizelists continued to be arrested in the capital and in Thessaly the reservists attempted to cut the railway line from Larissa to Athens. At all points of the country meetings were held to denounce the Allies and in nearly all the cities the municipal councils changed the name of the streets called Venizelos to the "18th of November" (that is to say, to December 1 new style in honor of the outbreak of that date against the Allies). On January 5 the government replied that it would accept certain of the conditions in the note of December 31, but it made so many exceptions that this practically amounted to a refusal. Among the reasons that encouraged the king to continue this policy was the fact that Italy was not in harmony with the Allies in their demands. Italy did not sign the note of December 31, but presented a separate note on the ground that she could not support the Allies' claim in regard to the Venizelists. She alleged that to do so would be to interfere in the internal affairs of Greece, but the recognition of Venizelos had displeased Italy for the Italians were more hostile to him than many of the pro-German Greeks. The Greek government took advantage of this difference of opinion, but a conference of the Allies was held at Rome and Italy finally accepted the entire terms of the note. A new ultimatum was submitted to the Greek government on January 9 and in this the Italian government joined without reserve. The Greek cabinet now replied, January 10, in a manner that was still unsatisfactory but more yielding. It evaded certain points, especially as regards the dissolution of the leagues of reservists and the transportation of the Allied troops by way of Larissa and it tried to impose certain conditions, namely, the raising of the blockade and the indication of the manner in which the Venizelists should be indemnified. The anti-Venizelist press continued to attack the Allies and the peace note of President Wilson gave the king occasion to declare that no country which was not involved in the war had suffered so much from it as Greece. About the same time a German representative arrived in Thessaly and this was taken as a sign that Germany would come to the aid of the government. The Allies, however, submitted a new ultimatum on January 13 and Greece thereupon seemed to give way. The Venizelists were released; the leagues of reservists disbanded; the transport of troops and arms into the Morea was rapidly executed. The garrison at Athens which led in the revolt on the Allies on December 1 left the city without any disorder and on January 24 the government presented its formal excuses to the representatives of France, Great Britain, Russia, and Italy for the attack of December 1. The ceremony took place at the Zappeion where the flags were saluted by the troops and by the people. Nevertheless, some of the demands of the Allies were not yet satisfactorily adjusted and the blockade which had begun on December 8, 1916, still continued. On February 2 Greece requested of the Allies the lifting of the blockade on the ground that their demands had been complied with, but on February 19 the Allied legations declared that the demands had not been fulfilled completely, especially with reference to the delivery of arms. On March 8 a telegram was sent by Mr. Lloyd George in reply to the request that the blockade be raised. He said that the Allied governments would be glad to raise the blockade as soon as they were convinced that the conditions of the ultimatum of January 5 and of the notes of December 8 and 14 were fulfilled by Greece and that the blockade would have already been raised but for such instances as the mining of the Corinth Canal and the continued activity of the reservists.

In the middle of April the situation in Greece was reported to be very serious. The demands of the Allies were still disregarded. The Lambros government had done nothing. The government disputed over various questions and had not taken a single step against the Germans or pro-Germans. The German agents were reported to be everywhere in Thessaly. Bands of irregular troops were organized in the neutral region and came frequently into conflict with the French. The reservists were said to be in relation with these irregulars. Complaint was made of this matter to the Greek government and certain officers were accused of organizing this hostile movement, but the government returned the reply that the officers in question were above suspicion. Between two and three thousand Greeek troops were allowed to pass back to the mainland of Greece wearing their uniforms. Upon the protest of the Allies the government began to demobilize these troops, but this was not carried out.

On May 1 a congress of representatives of the Greek colonies was held and they voted a resolution against King Constantine. On May 4 the ministry of Lambros fell and was succeeded by the ministry of M. Zaimis. The fall of the Lambros cabinet was welcomed by the Allies, as he had followed a policy of delay and opposition, whereas it was supposed that M. Zaimis would be less difficult.

Attitude of Venizelos. On May 30 M. Venizelos was reported in the press to have declared reconciliation with King Constantine to be impossible. He accused the king of being in constant relation with Germany, of trampling the constitution under foot, of turning traitor toward obligations of the treaty with Serbia, and of leading Greece to ruin. He was, moreover, no longer a king, but merely a party chief. It was the opinion of M. Venizelos and his ministers that the most important thing for Greece was that the dynasty of Constantine, like the Turks, should be expelled, bag and baggage. After the war Greece could have a constitutional assembly at which the people could decide whether they preferred a republic or a monarchy. If they preferred a monarchy, the crown could be offered to some one who was worthy to be king. The provisional government had occupied the rich province of Thessaly because the crops which were on the point of being harvested were very rich and it was known that the king's government was about to issue a decree requisitioning them; if the government succeeded in seizing these crops it would be able to provision the army for a long time.

THE POLICY OF THE ALLIES. Demand for a more vigorous policy on the part of the Allies now became urgent, as illustrated by the following comments in the press: The new prime minister, M. Zaimis, while pretending to desire friendly relations with the Allies, was in the opinion of the latter simply trying to gain time in order to take possession of the harvest in Thessaly, which was exceptionally good and would, perhaps, suffice for the support of the royal army to the close of the year. This policy of temporizing had been the constant characteristic of all the recent ministries. The king himself declared that the war was approaching its end and that it was useless to resort to new measures. In certain quarters the policy of the Allies was regarded as too hesitating. The idea that it was necessary to defeat the Bulgarians before settling affairs with Greece was condemned by these critics, who maintained that the Greek difficulty would have to be cleared up before it was possible to beat the Bulgarians. The Bulgarians once defeated, King Constantine would at once take sides with the Allies. In London it was not believed, apparently, that the necessary condition of success on all the fronts was that the enemy should be deprived in advance of aid and supplies. Even in France this view was not strongly supported. Despite the accession of Lloyd George the old policy continued to rule. The Allies were blamed also for their engagement in their declaration of January 8 that in return for certain promises of M. Lambros they would not permit the extension of the Venizelist movement. But in spite of that engagement they still possessed liberty of action since they had expressly reserved it to themselves for maintaining by their own means on land and sea the safety of their army if there was any obstacle thrown in the way by the Greek government to the execution of its promises within the next fifteen days. This time had long since expired. The show of good will on the part of the government was taken by some to be simply a trick. The attitude of the French cabinet seemed to be firm on this point, but it was a question whether it could win over the Allies of France to a firm and radical policy toward the Greek government. Popular opinion in England also seemed to favor such a policy; but the Government had apparently not been ready to adopt it. These critics inquired why when the national sentiment in all the three protective powers of Greece was entirely favorable to the provisional government and utterly hostile to the government of Constantine there should be further delay in acting in accordance with this sentiment and in suppressing out and out that barrier of the neutral zone, which permitted the royalists to keep their grip on Thessaly. Why, they asked, should not the Greek people be left free to act through their chosen representatives and their volunteer army, and why leave the field free in Greece to our enemies? It was reported that the Venizelist army at Saloniki and in Macedonia already numbered 48,000 men and 1900 officers, a larger number than the effective army of all Greece in times of peace. It provisioned itself regularly in the islands where there were from 15,000 to 20,000 additional volunteers under military training. One of the volunteer divisions of the Greek army had distinguished itself in battle with the Bulgarians and had received special praise from Gen. Sarrail. The rest of the army asked nothing better than to be allowed to see active service.

ABDICATION OF KING CONSTANTINE. Finally the Allies decided to intervene actively and control the affairs of Greece. M. Jonnart, formerly governor-general of Algeria, was appointed high commissioner for the Entente Powers. On June 11, having arrived in Greece, he conferred with the prime minister, M. Zaimis, with a view to obtaining from the government guarantees for the security of the army of the East, the reëstablishment of the unity of the kingdom, and the putting into effect of the constitution. On the following day, June 12, King Constantine abdicated, designating as successor his second son, Prince Alexander. On June 13 the ex-king left Greece and his successor issued a proclamation announcing his accession to the throne. M. Jonnart issued a proclamation to the Greek people on June 16 and on the following day M. Venizelos, who was head of the government at Saloniki, sent a congratulatory telegram to the French prime minister, M. Ribot. On June 20 the Greek minister of the interior, on the demand of the high commissioner, published the list of persons who were to be expelled from Greece, and on the same day King Alexander addressed a letter to the prime minister, Zaimis, on the subject of restoring the unity of Greece. The proposal of the government to nominate a committee of two members of the Zaimist ministry and two Venizelist ministers to negotiate on the subject of political unity for Greece was approved by M. Jonnart. On June 25 the king accepted the resignation of Zaimis and called upon Venizelos to form a new ministry. This new ministry (see above *Government*) under Venizelos as president of the council was constituted on June 27. On June 29 the new prime minister in a speech to the people announced his intention of suspending the law which forbade the removal of magistrates. On the following day diplomatic relations between Greece and the Central Powers were broken off. The Greek minister at Berlin, M. Theotokis, resigned on July 1. All these events took place without disturbance, as did the meeting of the Greek troops on July 2 on the occasion of the king's accession to take the oath of allegiance. On July 7 the government decided to call together the Chamber, which had been elected on May 29, 1915, and dissolved by King Constantine. The Chamber reopened on July 25, but adjourned on July 27 in order to choose its committees. On July 28 the French troops evacuated Athens.

The proclamation in which the king announced his abdication and bade farewell to Greece was as follows:

> "Yielding to necessity, accomplishing my duty towards Greece, and having in view only the interests of the country, I am leaving my dear country with the crown prince, leaving my son, Alexander, on the throne. Still, when far from Greece, the queen and I will always preserve the same love for the Hellenic people. I beg all to accept my decision calmly and quietly, trusting in God, whose protection I invoke for the nation. In order that my bitter sacrifice for my country may not be in

vain I exhort you, for love of God, for love of our country, and if you love me, to maintain perfect order and quiet discipline, the slightest lapse from which, even though well intentioned, might be enough to cause a great catastrophe. The love and devotion which you have always manifested for the queen and myself in days of happiness and sorrow alike are a great consolation to us at the present time. May God protect Greece."

The new king's proclamation to the Greek people issued also on June 12 was as follows:

> "At the moment when my august father, making a supreme sacrifice to our dear country, entrusts to me the heavy duties of the Hellenic throne, I express but one single wish, that God, hearing his prayers, will protect Greece; that He will permit us to see her again united and powerful. In my grief at being separated in circumstances so critical from my well-beloved father, I have a single consolation: to carry out his sacred mandate, which I will endeavor to realize with all my power, following the lines of his brilliant reign, with the help of the people, upon whose love the Greek dynasty is supported. I am convinced that in obeying the wishes of my father, the people by their submission, will do their part in enabling us, together, to rescue our dear country from the terrible situation in which it finds itself."

The reason for the dethronement of the king was explained by M. Ribot on June 14. After outlining the course of Allied diplomacy in Greece and admitting that it had suffered from lack of unity on the part of the powers he said that they had finally come to the same policy and thereupon appointed M. Jonnart as high commissioner to carry it out. A British and French force was first sent into Thessaly to seize important military points. It had met with no resistance except at Larissa, where part of the garrison offered a feeble opposition. Everywhere the people had joined the government of Venizelos. The representative of the powers had shown the Greek government that he had come merely to aid Greece in regaining her national unity. It was impossible to accomplish this if the king, who had repeatedly violated the constitution and shown himself hostile to the protecting powers, should be permitted to reign. His eldest son also was unacceptable on account of his known hostility to France.

THE POINTS AT ISSUE. A summary of the long-standing difficulty between the Allies and the ex-king's government may be of service.

The expedition in the Near East had been severely criticized both in France and England as useless and the criticism increased when the Allies followed a temporizing policy with the Greek government in spite of its plainly pro-German attitude. The Greek government had from the first been a menace to the Allies, who feared that the moment their army advanced in Macedonia the king's forces would attack them in the rear or cut off their communications. The reason why the Allies followed their hesitating course toward Greece was said by many to be due to the opposition of the former Russian government to a more radical course toward Greece. Constantine, encouraged by the course of the Allies, continually intrigued with Germany and was deterred from active hostility only by the blockade. Now, if he could possess himself of the crops of Thessaly he would deprive the Allies not only of important aid, but would weaken the Venizelists, who themselves were counting on a portion of the harvest. The king's arguments on his own behalf were given at some length in the preceding YEAR BOOK. He argued that had Greece gone into the war on the side of the Allies she would have been destroyed at once under the blows of the Austrians, Germans, Turks, and Bulgarians. He characterized as absurd the pretension that the Allies were fighting on behalf of the weak and the oppressed. He implied that Greece would share the fate of the other little nations that had entered the war. He laughed at the idea that the Allies and their partisans were fighting on behalf of the constitutional liberties of Greece. He remarked that the present war took little account of constitutional liberties—that if the parliament stood for war it was good, that if it voted for peace it was bad and in the pay of Germany. He denied the charge that his party was pro-German: he said the general feeling was never in favor of the Germans, but it also was never in favor of committing suicide for the sake of the Allies. He declared that Greece was the victim of the Allied ministers in Athens, who had seen fit to put themselves at the head of a party, that is to say, the Venizelists, and act against the government. He predicted that neither Germany nor the Allies would be defeated, but that the war would simply drag on until each side was exhausted, and that peace when it came would not take into account the rights of small nationalities.

On the other hand the contention of the Allies was that in the first place the king's government had not carried out the pledges that it made in December, 1916. In the second place the whole course of his government had been not only hostile to the Allies, but against the wishes of the majority of his own people. In March, 1915, M. Venizelos, supported by a strong majority in the Greek Chamber, had proposed to intervene on behalf of the Allies. The king dismissed him, dissolved the Chamber, and tried by corrupt means to control the elections. In the following October M. Venizelos, who was returned to parliament by the will of the people, caused the Chamber to vote that Greece would go to the aid of Serbia in accordance with the treaties. The king dismissed him again, and the Chamber was a second time dissolved. The king's ministers contrived to be elected, the larger part of the voters absenting themselves, and others voting under the direction of their superior officers. From March 6, 1915, to June 11, 1917, Greece, whose constitutional government was guaranteed by treaty, was deprived entirely of constitutional rights except during the six weeks of the last ministry of Venizelos. A vast public debt had been incurred; trade was stopped; and the king, in addition to this, had laid on the country the virtual burden of war since he kept the army on a war footing. The best citizens of Greece had formed a government at Saloniki and the Allies in supporting that government and forcing the abdication of Constantine were delivering Greece from her own oppressors. They were made guardians of the Greek constitution by former treaties. The Allies accused the king of betraying military information to the Germans. They declared that when the French army prepared an offensive its plan of concentration was communicated to the Germans by way of the royal palace; then again, the king had shown himself a traitor on December 1, 1916, when gatling guns were trained on the Allied marines.

The New Government. One of the first acts of the ministry was the dismissal from the public services of all the Pro-Germans who had been especially objectionable under the former government. There were about fifty arrests of officers of the army and navy and more were threatened. It was announced that the government intended to prosecute those who had been concerned in the crimes of December 1, 1916. It was also announced that action would be taken against the Metropolitan, who had in a public ceremony pronounced an anathema against M. Venizelos in December, and that meanwhile the relations between the Holy Synod and the government must remain in suspense. On July 2 the troops and officers in Athens publicly took the oath of fidelity to the country, king, and constitution. The Allies ceased to exercise their control over the administration except as regards customs duties and passports, and promised to relinquish these also after a short time. The relations of Greece and Italy were not clearly understood. It was known that M. Venizelos did not wish the Italian troops to retain the possessions that they occupied and desired that what belonged to Greece should be returned to her. It was planned to discuss this subject at a conference in Paris. This took place afterwards and went into the matter thoroughly.

There had been at first a good deal of alarm occasioned by King Alexander's unexpected announcement that he would follow in the footsteps of his father, but it was soon established that this did not really represent his views and that in fact it was not written by the king but by a statesman who wished to conciliate the sympathizers with the ex-king.

The views of M. Venizelos as to the situation were as follows:—The abdication of King Constantine was, from the point of view of the Venizelists, a necessary condition for the renewal of the alliance with Serbia. In his opinion the large majority of the Greek people desired the overthrow of the monarchy and the establishment of a democratic form of government. However, in the present crisis the people were prepared to fulfill the wishes of the powers and to give Constitutional Monarchy a new and fair trial; but they held it necessary to revise the constitution so that the democratic character of the monarchy should be clearly defined and no king should ever be able to say to a responsible minister as King Constantine had said to Venizelos, that he was not responsible to the will of the people.

Here and there the new government had to deal with agitators who were trying to undermine it and to rouse public opinion against the Entente Allies, nevertheless an improvement in the general condition was reported. The Chamber appointed a commission to look into the question of bringing to trial certain members of the former ministries. It then adjourned. While the policy of leniency and pardon for legal offenses was generally followed the government did proceed against some of the most violent of its former enemies. It took measures against Herr Streich, who was one of the most active agents of Germany. Gradually the Greek army was organized under the direction of a French military commander, Gen. Braquet. A good many of the officers who had served the king now came forward and confessed their error and sought pardon. While Greece was preparing to aid the Entente Allies she demanded some aid from them in return. A serious and widespread crisis had developed. The scarcity of food was growing more severe and the needed importations did not arrive fast enough or in sufficient quantities. Greece asked the Allies to reënforce her merchant fleet with a number of vessels. The treasury and the financial conditions were in a bad state. To aid in this particular a French authority on finance, M. Sergent, of the bank of France, was sent on a special mission to Athens. As to relations between Greece and Italy they seemed to be in a fair way toward settlement. Italian troops evacuated Jannina, and Italy recognized the rights of Greece over northern Epirus. Both of these concessions produced an excellent effect on the Greek capital.

On October 22 the Greek Chamber confirmed the recommendation of the commission that advised the impeachment of the Gounaris Cabinet. The vote was 125 to 19. The Chamber also decided to summon before the high court the ministers of the Lambros Cabinet, with two exceptions; and ten deputies were chosen to act as prosecutors at the trial. See War of the Nations; Archæology.

GREEN, Adolphus Williamson. An American lawyer and capitalist, died March 8, 1917, in New York City. He was born in Boston in 1843, graduated at Harvard in 1863, and after an interval of six years, during which he was principal of the Groton, Mass., high school and librarian of the New York Mercantile Library, he began to study law in the office of Evarts, Southmayd, and Choate. Admitted to the bar in 1873, he began practice in Chicago. For two years (1882-84) he served as attorney for the village of Hyde Park, Ill., and later in a like capacity for the South Park Commissioners. He built up a successful practice, especially as a corporation lawyer. In 1890 he helped to organize the American Biscuit and Baking Company and in 1898 formed the National Biscuit Company. Of this corporation, which became famous for its products and as one of the largest employers of labor in the country, Mr. Green was early general counsel and member of the executive committee, later chairman of the board of directors, and, after 1905, president. He devised an air-tight package to replace the selling of crackers in bulk, introduced new sanitary methods, and built up his business by clever advertising. Every year he traveled through the country, personally inspecting the hundreds of agencies maintained by his company.

GREENLAND. A Danish Arctic colony. Estimated area, 2,200,000 square kilometres (849,420 square miles). Area of settlements (colony proper), 88,100 square kilometres (34,015 square miles). Population of colony proper, 13,517. Trade is restricted to Denmark. Principal exports are seal and fish oil, seal skins, and blue fox skins. The director resides at Copenhagen.

GREGORY, Caspar René. A German theologian, killed in battle April 9, 1917. He was an American by birth and education, but had been resident in Germany since 1876, first as subeditor of the *Theologische Literaturzeitung* of Leipzig and from 1889 as professor of theology in the university there. Born in Philadelphia in 1846, he had graduated at the University of Pennsylvania in 1864, and after theological studies in Philadelphia and Princeton went to Leipzig, where he received the Ph.D. in 1876. Honorary degrees came to him from Yale, Pennsylvania, Glasgow, and Leipzig. Professor Gregory early aided Dr. Charles Hodge to publish his *Systematic Theology* (1870-73) and from that time he devoted himself largely to scholarly writing. Among his works were: *Prolegomena* to the eighth edition of Tischendorf's *Novum Testamentum Græce* (1884-94); *Textkritik des Neuen Testaments* (3 vols., 1900-09); *Einleitung in das Neue Testament* (1909); *Die Schriften Carl Wesselys* (1910); *Die Koridethi Evangelien*, with G. Beerman (1913). Although an elderly man at the outbreak of the European War, Professor Gregory insisted on enlisting in the German army as a private. He celebrated his seventieth birthday at the front and rose to be lieutenant before his death. At various times he had made lecture tours of the great universities and seminaries in the United States and Canada, and in 1885 he declined the chair of New Testament Greek at Johns Hopkins.

GRENADA. A British West Indian colony, consisting of the island of Grenada, which is the most southerly of the Windward Islands group, and some of the Grenadines. The area of the island is about 119 square miles; the Grenadines have an area of about 14 square miles (Carriacou, the largest, 8467 acres); so that the area of the colony is stated at 133 square miles. At the 1911 census, the population of the colony was 66,750 (6886 in Carriacou); estimate of December 31, 1915, 71,567. The capital and chief town is St. George's (population, 4916); it has an excellent harbor. About 2 per cent of the inhabitants of the colony are Europeans, almost all the rest being negroes. Sugar culture is declining, and cacao is the crop of chief commercial importance. Imports and exports in 1915 were valued at £260.495 and £466,318 respectively. Revenue in 1915-16 amounted to £96,420; expenditure, £103,992. Public debt, £123,670.

GRENADINES. See Grenada; and Saint Vincent.

GREY, Albert Henry George, fourth Earl. A British administrator who died at his home in Northumberland, England, on August 29, 1917. He was educated at Harrow and at Trinity College, Oxford, where he graduated in 1873. He early entered upon a political career and in 1878 was sent to the House of Commons as a member of the Liberal Party, although he was unseated on account of a technicality the same year. Later he was returned and was a member from Northumberland continuously from 1880 to 1886. In 1886-87 he was Administrator of Rhodesia, South Africa, and from 1898 to 1904 was a director of the British South African Company. He was a close friend of Cecil Rhodes in his work of consolidating British power in South Africa. He was appointed Governor-General of Canada in 1904, succeeding his brother-in-law, Lord Minto. His term was supposed to expire in 1909, but it was extended for two terms of one year each, it is said, upon the earnest request of Canadians, among whom he was extremely popular. He inaugurated the new provinces of Alberta and Saskatchewan in 1905. Earl Grey was also very much interested in social reforms. He supported some Salvation Army projects for a time and was interested in attempts to reform the retail liquor trade. He was also an able financier, an energetic, tireless, and always modest administrator. He was a friend of J. H. Choate (q.v.), Theodore Roosevelt, William H. Taft, and many other prominent Americans. He published *Hubert Hervey: A Memoir* (1899).

GRIFFIN, W. S. Rev. Dr. Griffin, who had been in the Methodist ministry for a period of sixty-eight years, died on October 13, 1917. He was born near Hamilton, Canada, ninety-one years ago. He had the reputation of being the oldest minister in the Methodist Church. He was ordained at the Hamilton (Canada) Conference in 1849, and was much in demand on the Niagara peninsula, where his jocular manner was often a great attraction at any special gathering. He subsequently held charges in Hamilton, Chatham, St. Catherines, Guelph, Stratford, Brantford, and Toronto. He was interested in the church superannuation movement and twenty-five years ago was appointed treasurer of the fund, a position which he held until his death.

GROSVENOR, Charles H. General. A soldier and a politician, died on October 30, 1917. He was born in Pomfret, Conn., on September 20, 1833. He taught school in the West for a while and then was admitted to the bar in 1857. The outbreak of the Civil War saw him a private in the 18th Ohio Infantry. By September, 1861, he was a commissioned major. His rise in the army was rapid and he had the rank of a brigadier general when he was mustered out of service in 1865. He entered upon a political career in 1874 when he went to the Ohio House of Representatives and was a member of the House of Representatives at Washington from 1885 to 1891 and again from 1893 to 1907. He was a picturesque figure in Republican politics during this period. He was the author of an authoritative life of President McKinley and the editor of the *Book of Presidents*.

GUADELOUPE. A French colony composed of two main and a number of smaller islands of the Lesser Antilles. Area, 1780 kilometres (687 square miles); population, 212,430. The capital is Basse-Terre. The leading products for export are cacao, coffee, and sugar. On November 22, 1917, application was made for a 75-year franchise to cover the building and operation of 118 miles of narrow gauge electric railways for the transportation of passengers, mail, baggage, and freight. This project involved the control of two waterfalls for power.

GUAM. An insular possession of the United States situated in the Pacific Ocean, lying between 13° 13′ and 13° 39′ north latitude and 144° 37′ and 144° 58′ east longitude; area estimated, 225 square miles. Acquired from Spain by the Treaty of Paris, 1898. Captured by the United States naval forces under Capt. Henry Glass, U. S. N., June 21, 1898, formally taken possession of by the United States, February 1, 1899. For administrative purposes Guam comes under the Navy Department, and, to facilitate such administration, the whole island with surrounding islands and cays has been designated as a Naval Station. The governor, who is a naval officer designated by the president, is also commandant of the naval station, Guam.

The population of Guam, exclusive of officers and enlisted men of the navy and marine corps and their families, on July 1, 1917, was 13,916, of whom 13,697 are classed as "natives" and the remainder as "foreigners." Of the latter, the largest number are Japanese, 114. Only 58 are classed as Americans. Death rate per thousand 17.5, birth rate 46.4.

The imports for the fiscal year ending June 30, 1917, exclusive of naval and military stores and supplies, were $286,651.95, of which all but $53,466.78 was received from the United States and its possessions. Exports, $86,529.95. The principal export was copra, of which 761,474 pounds were shipped to Japan and 1,472,576 to the United States. The principal imports were lumber, rice, flour, tinned and fresh meats, canned provisions, automobiles, kerosene and gasoline, liquors, tobacco, clothing, and cotton goods.

The revenues of the insular government in 1917 were $94,182.86, expenditures $93,629.56. Guam is a station of the Commercial Pacific Cable Company and cables from Manila, Yokohama, Midway, and Yap Islands are landed here. A high power radio station was constructed by the Navy Department. The U. S. Department of Agriculture maintains an experiment station in Guam. The port of entry is Apra Harbor, five miles from Agana, the seat of government. Apra is closed to foreign vessels except by special permission of the United States government. During the fiscal year ending June 30, 1917, thirty-eight vessels having a total tonnage of 115,295 visited the port.

The governor in 1917 was Capt. Roy C. Smith, U. S. N., who assumed office May 30, 1916.

GUATEMALA. The most northwesterly of the Central American republics. It borders both the Caribbean Sea and the Pacific Ocean. The capital is Guatemala City.

Area and Population. On account of the unsettled boundary with Honduras, estimates of area vary considerably. One estimate is 48,290 square miles, an area a little smaller than that of Louisiana; another estimate is 43,641 square miles. About 60 per cent of the people are Indian, and most of the remainder mestizo. The total population is estimated at upwards of 2,100,000. Births in 1916, 66,668; deaths, 46,443. Guatemala City had in 1917 an estimated population (very largely white) of over 100,000. The estimated population of Quezaltenango is about 34,000; Cobán, 31,000; Totonicapán, 29,000.

Education. Elementary instruction is free and nominally compulsory. Illiteracy is still common, but during his long presidency Estrada Cabrera has sought to promote education, a purpose he reiterated in a message to the Congress March 15, 1917. In 1915 there were 1899 public primary schools, with 65,904 pupils enrolled; in 1916, 1942 schools, with 67,152 pupils. Schools of higher grade in 1916 numbered 21. There are a law school, a medical school, and a few other institutions for professional instruction. There is no established church, but the prevailing religion is Roman Catholicism.

Production and Commerce. Guatemala is a fertile country, yielding many tropical and subtropical products. The most important crop is coffee; the normal yield is about 100,000,000 pounds, of which about four-fifths are for export. Coffee exportation before the great war was largely to Germany. The estimated coffee yield in 1916-17 was about 80,000,000 pounds. The reported yield of other crops was as follows in 1916, in quintals of 101.4 pounds: corn, 6,110,000; wheat, 344,041; rice, 135,547; beans, 180,000; potatoes, 248,000. Reported sugar production in 1916, 971,623 quintals. Banana yield in 1916, 9,351,485 bunches, of which 3,177,426 were exported. In some parts of the country, cattle raising is a profitable industry; cattle at the end of 1915, 619,895. Forest products include rubber, chicle, dyewoods, cedar, and mahogany.

Imports and exports have been valued as follows:

	1913	*1914*	*1915*	*1916*
Imp. ..	$10,062,328	$9,331,115	$5,072,476	$8,539,294
Exp. ..	14,449,926	12,754,027	11,566,586	10,637,886

Principal imports in 1914 and 1915 respectively, in thousands of dollars: cotton goods, 1289 and 786; foodstuffs, provisions, and liquors, 545 and 538; linen, hemp, and jute goods, 225 and 252; paper, etc., 165 and 147; iron and steel, 516 and 121; leather, 143 and 95. Leading exports in 1914 and 1915 respectively, in thousands of dollars: coffee, 10,392 and 8949; bananas, 1017 and 1082; hides, 370 and 541; sugar, 354 and 333; woods, 302 and 176; rubber, 95 and 49. Imports from and exports to principal countries in 1915, in thousands of dollars: United States, 3752 and 6881; United Kingdom, 577 and 1322; Germany, 146 and 50; France, imports, 124; Mexico, 2 and 144; Central America, 3 and 134. In 1913, imports from Germany were valued at $2,043,329, and exports thereto at $7,653,557.

Communications. Transportation is carried on largely by wagon or on mule back. There are a few good roads and in recent years considerable attention has been given to road building and improvement. The main line of railway is in the southeastern part of the country, connecting Puerto Barrios, on the Caribbean, with San José, on the Pacific, via Amates, Gualán, Zacapa, Guatemala City, Amatitlan, and Esquintla; the distance is about 270 miles. The total length of railway open to traffic in the republic is reported as 563 miles (906 kilometres).

Telegraph, about 4400 miles, with 245 offices. Post offices, about 400.

Finance. The legal standard of value is silver. The value of the silver peso fluctuates with the price of silver; on October 1, 1917, it was 71.05 cents. The currency of Guatemala is inconvertible paper. The approximate average value of the paper peso in 1915 was 2½ cents; on October 1, 1917, it was about 2⅔ cents. Estimated revenue and expenditure for 1916-17, 66,200,000 and 63,095,693 pesos paper. Customs duties are the principal source of revenue. Estimated expenditure for 1917-18, 64,780,957 pesos paper, including 23,139,148 pesos for the public debt, 10,310,707 for war, 7,704,370 for public instruction, and 7,141,930 for fomento.

Foreign debt (December 31, 1915), £2,357,063, including unpaid interest, £844,603. Internal debt (1914), 117,853,635 pesos paper.

Government. The legislative power is exercised by the National Assembly (69 members, elected by direct vote for four years) and the Council of State (13 members, in part elected by the Assembly and in part appointed by the president). The president is elected for six years by direct vote. The president in 1917 was Manuel Estrada Cabrera (born 1857), who succeeded to the executive office in March, 1898, and subsequently was elected for terms ending March 15, 1905, 1911, 1917, and 1923. First designate, Gen. Mariano Serrano; second designate, Gen. Manuel Duarte—both elected by the National Assembly May 24, 1917. In consequence of disturbances along the frontier which were supposed to be of German origin, martial law was declared in the country on April 9. On April 28 relations with Germany were formally broken off. See EARTHQUAKES.

GUIANA. See BRITISH GUIANA; DUTCH GUIANA; and FRENCH GUIANA.

GUNS. See MILITARY PROGRESS.

GUTHRIE, GEORGE WILKINS. An American lawyer and diplomat, died in Tokyo, Japan, March 8, 1917. He was born in Pittsburgh, Pa., 1848, and all his life was identified with that city. After graduating from the Western University of Pennsylvania (now University of Pittsburgh), A.B. in 1866, A.M. in 1868, and from the law school of Columbian (now George Washington) University, he began the practice of his profession in his native city. Early entering Democratic politics, he served as associate counsel for the Tilden electors before the Florida Returning Board in 1876, and in 1884 was assistant secretary of the Democratic National Convention. He became known for humanitarian and civic activities, and in 1896 was reform candidate for mayor of Pittsburgh. Although unsuccessful at that time, he was elected in 1906 and held office for three years, greatly improving municipal conditions during this period. In 1902 he was unanimous choice of the Pennsylvania Democratic Convention for lieutenant governor. The University of Pittsburgh and Trinity College gave him honorary degrees. President Wilson appointed Mr. Guthrie ambassador to Japan in 1913 and he died while at this post. He represented the United States at the funeral of the Dowager Empress in 1914 and at the coronation of the new Emperor in 1915. His body was sent home on the Japanese cruiser *Asuma*.

GUY, GEORGES GUILLAUME. A French actor, died in Paris February 28, 1917. He was born in Paris in 1857. Guy was "discovered" by the comedy actor Berthelier, who came to the *pension* of the Frères de Passy, where Guy was at school, to organize plays for fête days. At nineteen he went into musical comedy. His talent as a violinist he used to good effect in *Un lycée de jeunes filles*. At the Follies-Dramatiques, he played in *Boccace* and *La princesse des Canaries*, then went over to the Théâtre de Cluny, and for two years toured in the United States with Maurice Gros. After his return his acting in the rôle of the Vicomte de Saint-Florimond in *Champignol malgré lui* in 1892 placed him in the front rank of comic actors of the time. After several years he left the Folies for the Variétés, where, with a few excursions to other playhouses, all the rest of his stage life was spent. In 1904 he had a great success as Leonard in *Varennes*, with Sarah Bernhardt. At the Renaissance he appeared with Guitry in a number of plays. Guy's greatest record was made in the operettas of Offenbach, Hervé, and others, such as *Le petit Faust*, *Orphée aux enfers*, *La vie parisienne*, *Les brigands*, *La périchole*, etc. He also appeared each year in one or two new light comedies. His work was characterized by spontaneity, drollery, variety. His mimic gift was remarkable, and he kept himself free from vulgarity. He was often proposed for the Comédie-Française, but remained faithful to the Variétés till his death.

GUYNEMER, E. G. See AËRONAUTICS.

GYMNASTICS. The nineteenth annual intercollegiate gymnastic championships were held at New Haven, Conn., the University of Chicago being the winner with a total of 14½ points. Haverford was second with 10 points and Princeton third with 9 points. Other colleges to score were: Pennsylvania, 8; New York University, 6; Harvard, 5; Rutgers, 5; Yale, 2; Amherst, ½. The individual winners were: horizontal bar, Sturredge, Pennsylvania; side horse, Dyer, Chicago; parallel bars, Campbell, Harvard; club swinging, Summerrill, Rutgers; flying rings, Crossman, Haverford; tumbling, Veavey, Chicago.

The Norwegian T. and A. C. was the victor in the national Amateur Athletic Union championships contested at New York City, scoring 27 points. The other teams finished as follows: National Turn Verein, 18; New York A. C., 13; Socialer Turn Verein, 6; Grace Club, 5; West Side Y. M. C. A., 5; New York Turn Verein, 4; First Bohemian A. C., 4; Cascade A. C., 4; 92d Street Young Men's Hebrew Association, 3; Philadelphia Turngemeinde, 3; Rutgers A. A., 2; Woodstock Turn Verein, 1.

The winners in the various events were: rope climbing, F. Seibert, Grace Club; long horse, B. Winshensen, Norwegian T. and A. C.; tumbling, A. W. Nugent, National T V.; horizontal bar, F. Hell, Socialer T. V.; Indian clubs, R. W. Dutcher, New York A. C.; side horse, C. Zenker, New York T. V.; parallel bars, B. Jorgensen, Norwegian T. and A. C.; flying rings, O. Poll, National T. V.; all-around, B. Jorgensen, Norwegian T. and A. C.

HAGUE, ARNOLD. A distinguished American geologist, died in Washington, D. C., May 14, 1917. He was born in Boston in 1840. After graduating from Sheffield Scientific School, Yale, in 1863, he studied for three years abroad, at Göttingen, Heidelberg, and the Freiberg School of Mines. As assistant geologist in the United States Geological Exploration of the 40th Parallel between 1867 and 1877, he investigated mines and mining processes in Montana, working under the noted geologist Clarence King. Beside individual chapters in the general report of the exploration, he wrote, with Samuel F. Emmons, a report of a detailed survey across the Cordilleras of North America from the Great Plains to the Sierra Nevadas. In 1877-78 Dr. King served as government geologist of Guatemala and in 1878-79 made mine examinations for the Chinese government. Thereafter he was a geologist on the United States Geological Survey. After making a special study of the Eureka district, he wrote a book on this subject. Beginning in 1883 he was best known for his work in the development of the Yellowstone National Park. He studied not only the geology of the region, but its flora and fauna, and its availability as a public pleasure ground, and made valuable reports to the government. With others he wrote *Geology of the Yellowstone National Park* (1899), and alone he published an *Atlas* of the park (1904) and *Origin of the Thermal Waters in the Yellowstone National*

Park (1911). Dr. Hague gained an international reputation and received many honors. Columbia University gave him the degree of Sc.D. and Aberdeen that of LL.D., he was vice-president of three International Geological Congresses, member of the National Academy of Sciences, and in 1910 president of the Geological Society of America. In 1896 he served as a member of the commission appointed by the National Academy of Sciences to prepare a plan for national forest preserves.

HAIG, Sir DOUGLAS. See WAR OF THE NATIONS.

HAIGHT, CHARLES COOLIDGE. An American architect, died at Garrison, N. Y., February 9, 1917. Born in New York City in 1841, he graduated at Columbia University in 1861, taking his A.M. there three years later. In 1862 he enlisted in the 7th Regiment of Maryland Volunteers and later he was lieutenant and captain in the 39th New York Volunteers. Wounds received in the Battle of the Wilderness forced him to leave the army. Mr. Haight designed many notable buildings, and was particularly successful in his work for colleges. He planned the old buildings of Columbia University on Madison Avenue, New York, now demolished, the General Theological Seminary group, and at Yale University Vanderbilt, and Phelps Halls, the university library, Mason, Sloane, and Osborn laboratories, and new dormitories for the Sheffield Scientific School. In New York, besides the buildings already noted, he is represented by St. Ignatius Church, the New York Cancer Hospital, the Havemeyer house on Fifth Avenue, the garrison chapel on Governor's Island, and two armories. At Hartford, Conn., is his Keney Memorial Tower. In 1906 Yale conferred an honorary M.A. on Mr. Haight.

HAITI. A West Indian republic. It occupies the western part of the island of Haiti; the eastern part of the island is the Dominican Republic. The capital of the republic of Haiti is Port-au-Prince.

AREA, POPULATION, ETC. The estimated area of the republic is 28,676 square kilometres (11,072 square miles). The population was estimated in 1912 at 2,500,000; it is not unlikely, however, that the number of inhabitants does not exceed 2,000,000. In density of population, Haiti disputes with Salvador first place among American republics. About 90 per cent of the people are negroes, and most of the remainder mulattoes. The official language is French; a French dialect is spoken by the common people. The largest city is Port-au-Prince, which is supposed to have over 100,000 inhabitants. According to a 1917 enumeration, the population of Cap-Haïtien is 18,900. Other towns of some importance are Les Cayes, Gonaïves, Jérémie, and Port-de-Paix. There are about 400 national schools and five public lycées, in addition to private schools.

PRODUCTION, COMMERCE, ETC. Agriculture and other industry are in a backward state on account of inadequate transport, the lack of thrift and progressiveness among the people, and years of governmental instability, which discouraged the introduction of foreign capital. The leading crop commercially is coffee; other crops of some importance are cacao, sugar cane, tobacco, and cotton. Logwood is a valuable product.

Statistics of the foreign trade have not been issued officially in recent years. According to consular advices, imports in 1913 were valued at $8,100,125; in 1914, $7,612,792; in 1915, $4,344,763; in 1916, $10,312,000. For both 1915 and 1916, export values are estimated at about $13,000,000. Imports are largely from the United States, exports largely to France and the United States. Exports in 1914 and 1915, respectively, in thousands pounds: coffee, 78,512 and 36,879; cacao, 6088 and 3468; cotton, 3122 and 1762; logwood, 54,519 and 65,600; cottonseed, 5369 and 533; goatskins and hides, 1265 and 669. The honey export in 1914 was 1,264,690 gallons and in 1915 668,630 gallons.

Railway, including light railway, about 225 kilometres (140 miles); telegraph line, 124 miles; post offices, 31.

FINANCE. Haiti has an inconvertible paper currency. The monetary unit is the gourde; its approximate value in 1916 was 16 cents and on October 1, 1917, 18.3 cents. The greater part of the revenue is derived from duties on imports. Export duties and import surtaxes are payable in American gold. The reported revenue for the year ended September 30, 1916, was $3,909,980 and 3,836,032 gourdes paper. The sanctioned expense budget for that year was $3,999,732 and 3,479,821 gourdes paper. This budget was continued for the fiscal years 1916-17 and 1917-18. Public debt July 1, 1914, $25,892,181 and 13,534,812 gourdes paper. According to *Le Nouvelliste*, a newspaper of Port-au-Prince, the foreign debt (gold) on December 31, 1916, amounted to 120,912,060 francs. Public finance is under American control.

GOVERNMENT, ETC. The legislative power is exercised by the National Assembly, which consists of two chambers: the Chamber of the Communes (99 members elected for three years by direct vote) and the Senate (39 members, elected for six years by the Chamber of the Communes). The president is elected for seven years by the two chambers in joint session; he is not eligible for reëlection except after the interval of at least one term. The president in 1917 was Philippe Sudre Dartiguenave, elected August 12, 1915. A virtual protectorate by the United States over Haiti was established by a treaty ratified by the National Assembly in November, 1915, and by the United States Senate February 28, 1916. According to a report published on April 24 a new cabinet known as the Conciliation Cabinet was appointed with M. Chatelain as prime minister and minister of foreign affairs. On May 4 the president sent a message to Congress asking that war be declared against Germany. This followed the destruction by the Germans of the French steamer, *Montreal*, which carried five Haitians among the crew and three among the passengers. On May 11, however, after considering the subject, Congress refused to declare war on Germany, but it adopted a resolution protesting against the submarine warfare and it empowered the president to break off relations with Germany if the latter refused to make reparation for the loss of lives and to give guarantees for the future.

HALIFAX DISASTER. The most serious catastrophe of the year outside of the war stricken regions of Europe occurred on December 6 when a large section of the city of Halifax, Nova Scotia, and the town of Dartmouth directly across the harbor, were wrecked as the result of an explosion of a munitions vessel and a following conflagration. The French munitions ship *Mont Blanc* was bound from New York for Bedford Basin, Halifax, and was passing up the Narrows leading from the harbor to the Basin. The Belgian relief ship *Imo* was passing out to sea and had reached a point in the Narrows near Pier 8. Owing, it was alleged, to a misunderstanding of signals the *Imo* did not stop until too late and crashed into the *Mont Blanc*, piercing her on the port side almost to the engineroom. After the collision, the *Mont Blanc*, which carried a deck cargo of gasoline, almost instantly burst into flames, and was abandoned by her crew by the order of the captain, as he realized that an explosion was inevitable. About twenty minutes after the ship had been abandoned, the expected explosion of the large cargo of munitions occurred, and the north end of the city and the town of Dartmouth opposite on the easterly side of the harbor felt its full effects.

The explosion took place about 9 o'clock in the morning just as the business day of the city had begun, and whole blocks of dwellings particularly in Richmond opposite the scene of the explosion, were leveled. After the explosion fire broke out in many places simultaneously, so that it was impossible for fire engines and firemen to make any headway, and the fire virtually burned out of its own accord.

The cargo of the ship was said to be 2800 tons nitro-glycerin and trinitrotoluol, and so severe were the effects of the explosion that many believed in the first confusion that a German Fleet was bombarding the city, or that an attack was being made by Zeppelins. In Halifax proper the zone of destruction extended from the North Street railway station as far north as Africville to Bedford Basin, covering an area of about 2½ square miles, and this territory was absolutely laid waste, either by the explosion or by the following fire. Along the water front, great damage was done to the shipping and many of the crews of the vessels in the harbor perished.

The Central Passenger Station in the city was wrecked and many lives were lost of persons in it. Practically all the buildings and the freight yards were demolished and about 400 freight cars were destroyed, most of them by fires following the explosion. Some seventy or more passenger cars were badly damaged and at the Richmond station many employees were killed and injured as well as in the freight yards. Of the seventy trainmen reporting at that station ordinarily, but ten came on duty on the Monday morning following the disaster.

It was said at first that some 2000 persons were killed and many were rendered homeless by the explosion and fire, and a large portion of the majority included children in the public schools in the north end. Many injuries were occasioned by broken glass, while the blizzard that developed on the following day enforced rescue workers to suspend their operations and added to the death record those who perished of cold and hunger in the ruins of the shattered buildings.

The report submitted to the General Relief Committee by J. H. Wingfield estimated 1500 killed, 4000 seriously injured, 20,000 rendered homeless, and a total property loss of $50,000,000 as a result of the fire and explosion. The total number of identified dead numbered 854 and the unidentified 304, making a total of 1158 bodies recovered.

The value of homes destroyed or damaged beyond repair was not less than $7,000,000. The damage to homes that could be repaired, plus the value of furniture and personal effects lost, was estimated at $8,000,000. Damage to civic, provincial, government, military, naval, church, institutional, and industrial property was $25,000,000. These figures give a total property loss of $40,000,000 but they were only estimates of a tentative character, and in any event did not cover so-called replacement value. It was estimated that temporary shelter and relief for at least six months must be provided and this it was stated would cost about $5,000,000. In addition the number permanently disabled and families deprived of their means of support would probably involve another $5,000,000 so that the sum of $50,000,000 was given as a conservative estimate of the damage done.

Naturally in connection with the explosion rumors of treachery developed, and also that it was engineered by Germans or German sympathizers. Investigations were held, but so far as announced at the end of the year, no evidence of the kind developed. There were of course, in the port of Halifax, elaborate harbor improvements as described in the YEAR BOOK for 1915, where cargoes of various munitions of war were ready for shipment.

The American Red Cross shipped two relief trains including a special base hospital unit from New England, and the city was put under martial law. American seamen from a war vessel off the coast, landed and assisted in the rescue work. An appropriation of $1,000,000 for immediate relief was made by the Dominion government, and an appeal was sent out throughout the province asking for the collection of between $20,000,000 to $25,000,000 to carry on necessary relief work. Colonel R. S. Low of Ottawa, a civil engineer and contractor, was placed in charge of the clearing operations.

In connection with the Halifax disaster, a number of interesting developments occurred as to the liability of the fire insurance companies. If it could be shown that the losses were occasioned solely by the explosion, and there was no subsequent damage by fire, it was believed that no liability would attach to the insurance companies; while if the loss was due partly to explosion and partly to fire, the question assumed to be one for the government to construe; or if as was charged, the damage resulted from the explosion of government munitions, the government should assume the loss. On the other hand, if the loss was occasioned solely by the fire, the various insurance companies naturally were responsible. At the end of the year a distinct feeling was developing that the Dominion government should in large part reimburse the citizens for losses entailed, in that due military precautions were not observed.

HAMILTON COLLEGE. A non-sectarian institution for the education of men, located at Clinton, N. Y. In the fall of 1917 there were 198 students and twenty-three members of the faculty. The library contains 72,000 volumes and 20,000 pamphlets. Productive funds amounted to $1,200,650 and the income therefrom to $60,000. A bequest of $200,000 was received from Col. Payne. A course in military art and science was added to the curriculum in 1917. Hamilton College was founded in 1812. President, Frederick Carlos Ferry, LL.D.

HAMPTON NORMAL AND AGRICULTURAL INSTITUTE. A non-sectarian co-educational institution for the education of negroes and American Indians (principally the former) located at Hampton, Va. In the fall of 1917 there were 1838 students enrolled in the several departments and 130 members of the faculty. Sixty-three students and nine members of the faculty left to enter government service in 1917. Volumes in the library numbered 38,342. Productive funds in 1917 amounted to $3,087,624 and the income to $129,497. Hampton Institute was founded in 1868. On the death in 1917 of the principal, Reverend Hollis Burke Frissell, D.D., LL.D., Rev. James Edgar Gregg was elected to succeed him. William Howard Taft is president of the board of trustees.

HARBORS. See DOCKS AND HARBORS.

HARCOURT, EUGÈNE D'. See MUSIC, *Choral Societies*.

HARVARD UNIVERSITY. A non-sectarian institution of learning at Cambridge, Mass. In the fall of 1917 there were, exclusive of Summer School and Extension Teaching, 3684 students enrolled as follows: College, 1681; Graduate School of Arts and Science, 296; Graduate School of Business Administration, 93; Architecture, 18; Landscape Architecture, 7; Bussey Institution, 6; Divinity School, 59; Law School, 296; Medical School, 386; Dental School, 211; Special, 37; registered at Harvard in the Engineering and Mining Schools in coöperation with the Massachusetts Institute of Technology, 519. There were 922 members of the faculty. The following professors died during 1917: Hugo Munsterberg, Charles P. Parker, H. Langford Warren, Josiah Royce. Professor Barrett Wendell, professor of English, resigned and was made emeritus professor. Professor W. A. Neilson resigned to assume the presidency of Smith College. Professor E. C. Moore resigned to assume the presidency of the Los Angeles State Normal College. William Morse Cole was made professor of accounting, and William James Cunningham was appointed to the James J. Hill professorship of transportation. Professor Kuno Francke, professor of history of German culture and curator of the Germanic museum, resigned, and was appointed professor emeritus and honorary director of the Germanic Museum. Henry Moore Bates, dean of the Law School of the University of Michigan, was made professor of law in place of Professor Kales; Charles T. Copeland was made associate professor of English; Walter F. Dearborn and Henry Wyman Holmes were made professors of education; William Duane was made professor of bio-physics; Theodore Lyman and George Washington Pierce of physics; Edward Wyllys Taylor of neurology, and Henry A. Yeomans of government. John Livingston Lowes of Washington University, St. Louis, was elected professor of English. Maj. William Francis Flynn, U. S. A., was appointed professor of military science and tactics. Col. P. J. Azan and Lieut. A. Morize were appointed lecturers on military science and tactics. Lieut. F. Greene, U. S. N., was appointed lecturer on naval science and tactics. Volumes in the library including pamphlets number 1,800,000. The amount of productive funds in 1917 was $32,400,000, the income from which was approximately $3,200,000. The university received by gift: $2,272,000, including $200,000 for the general use of the Museum of Comparative Zoölogy; an anonymous gift of $387,942, precise purposes not yet specified; $50,000 gift of Mrs. William H. Bliss for scholarships and instruction in forestry; $75,000 from the estate of Peter Paul Francis Degrand: French works and periodicals in the exact sciences; $70,000 from Dr. Henry J. Dorr: Chair of Research and Teaching in Anæsthesia; $93,000 from Alexis Irénée Du-Pont: the Department of Chemistry; $145,733.50 from the estate of Mrs. John E. Hudson: John E. Hudson professorship of archæology; $50,893.80 from the estate of William S. Murphy: Murphy Scholarships; $100,000 from the class of 1892 as a Twenty-fifth Anniversary Fund. During the year of 1917 the alumni of Harvard undertook to raise a fund of $10,000,000 to add to the Endowment Fund of the University. Nearly half a million of this fund was raised when America entered the war and the project was postponed. A valuable collection of ethnological material from the Bagobo, Ata, and Moro tribes of Mindanao and from the Sulu region of the southern Philippine Islands was received as a gift to the Peabody Museum from Edward Boroditch, Jr. The Graduate School of Business Administration opened a new department which contained a library of business devices. The centennial of the Harvard Law School which would have been celebrated in 1917 was postponed indefinitely. Mrs. Josephine Spencer Gay of Brookline presented to the College Library a collection of selected books from the collection of the late Frederick Lewis Gay. The Supreme Court of Massachusetts handed down an undivided opinion in 1917 that the terms of the agreement between Harvard and the Massachusetts Institute of Technology were contrary to the intention of the late Gordon McKay as expressed in his will making a bequest to Harvard University for education in Applied Science. This agreement was made in 1914 and provided that instruction in certain branches of engineering was to be given through coöperation between the two institutions in the buildings of the institute at the cost of a portion of the income from the Gordon McKay bequest. In accordance with records compiled for the Harvard *Alumni Bulletin* more than 5000 former students and graduates of Harvard were taking part in the war at the end of 1917. Before the outbreak of hostilities Harvard organized a Reserve Officers' Training Corps and with the assistance of the French Ambassador six disabled French officers were assigned to teach military science at Harvard. A course was also established to prepare undergraduates interested in naval training for examination to be ensigns in the naval reserve; forty-seven students were registered in it at the end of 1917. Harvard coöperated with the Naval Reserve Radio School established in the Cruft High Tension Electrical Laboratory. The university was founded in 1636. President, Abbot Lawrence Lowell, LL.D.

HAVERFORD COLLEGE. An educational institution, under the control of the Society of Friends (Quakers), located at Haverford, Pa. In the fall of 1917 there were 170 students and thirty members of the faculty. Volumes in the library number 72,181. Productive funds in

1917 amounted to $2,577,574 and the income therefrom in the year 1916-17 was $122,095. Lyman Beecher Hall, professor of chemistry, retired; William Edward Lunt was appointed to be the first Gideon Scull professor of English constitutional history; Elihu Grant was called from Smith College to be professor of Biblical literature. The Hinchman Astronomical Fund of $10,000 was received under the will of Charles S. Hinchman. Haverford College was founded in 1833. President, William Wistar Comfort, Ph.D., Litt.D.

HAWAII. Population. The total population of the islands in 1910 was 191,909. This has increased rapidly since that year, and the estimated population on June 30, 1917, was 250,627. Of the total estimated, 102,479 were Japanese; 23,990 were Hawaiians; 19,100 Filipinos; 15,850 were part Hawaiian; 22,100 Chinese; and the remainder were Porto Ricans, Korean, Spanish and other Europeans, and Americans.

Agriculture. There was little change in the agricultural conditions in 1917. The imports of foodstuffs for human consumption amounted to $10,419,371, an increase of $2,606,012 over 1916. The sugar imported during the year amounted to 581,318 tons, valued at $62,743,372. The pineapples exported were valued at $8,933,056, or a total for the two products of $71,676,428, compared with a value in 1916 of $63,299,290. The Territory during the year enjoyed unusual agricultural prosperity. The friction between the laborers and plantationers was averted chiefly by the means of a bonus which aimed at a just participation in the profits. The Bureau of Agriculture and Forestry, which cared for the interests of pure agriculture in the Territory, was affected by laws passed in the 1917 session of the legislature. The division of hydrography was transferred to the department of public lands, to whose work hydrographic activities are more closely related. The division of entomology was changed into a division of plant inspection to care for plant quarantine and inspection to prevent injurious insects from entering the Territory. The board, as reorganized, consists of five divisions: Forestry, plant inspection, entomology, animal industry, and marketing, all of which are supported by specific appropriation out of the general revenues.

Commerce. The imports for the fiscal year amounted to $46,358,341, compared with a value of $34,098,210 in 1916. The exports amounted to $75,115,983, compared with a value of $64,670,852 in 1916. The following tables show the imports and exports by countries for the fiscal years 1916 and 1917 and the domestic exports by articles for the fiscal years 1916 and 1917.

Transportation. The progress of the Territory is peculiarly dependent upon the development of transportation facilities, due to the fact that it is isolated, and is compelled to look to the continental United States as a market for its products and also a supply depot for its needs. Traffic between the islands is carried on chiefly by the Interisland Steam Navigation Co., which operates a fleet of seventeen steamers. During the fiscal year, this company carried 79,215 passengers, and 402,093 tons of freight. The Oahu Shipping Co. operates seven steamers. Traffic with the mainland is carried on by the American-Hawaiian Steamship Company, the Matson Navigation Company, and the Great Northern Pacific Steamship Company. The latter carries chiefly tourists. The greater part of the freight is carried by the American-Hawaiian Steamship Company. During the year this company retained two of its largest steamers, each with a 14,000 tonnage, for the transportation of sugar from Hawaiian Island ports to San Francisco. Direct service between

IMPORTS AND EXPORTS, BY COUNTRIES, FISCAL YEARS 1916 AND 1917

Countries	*Imports*		*Exports*	
	1916	*1917*	*1916*	*1917*
Australia and Tasmania	$255,060	$164,571	$10,332	$8,684
Other British Oceania	43,455	70,166	23,115	76,194
British India	1,183,878	1,130,449	23	453
Canada	13,718	28,405	54,323	159,707
Chile	681,487	899,358	.....	40
France	3,906	7,902	.....	.....
Germany	170	2,507	.....	.....
Hongkong	380,192	428,126	3,817	5,348
Japan	3,113,622	3,406,571	50,121	203,752
United Kingdom	73,160	86,662	454	7,744
Other foreign	319,881	258,234	83,036	173,942
Total foreign	$6,068,529	$6,482,951	$225,221	$635,864
United States	28,029,681	39,875,390	64,445,631	74,480,119
Grand total	$34,098,210	$46,358,341	$64,670,852	$75,115,983

DOMESTIC EXPORTS, BY ARTICLES, FISCAL YEARS 1916 AND 1917

Articles	*United States, 1917*		*Foreign, 1917*		*Total, 1917*		*Total, 1916*	
	Quantity Pounds	*Value*	*Quantity Pounds*	*Value*	*Quantity Pounds*	*Value*	*Quantity Pounds*	*Value*
Sugar:								
Raw	1,127,825,256	$60,137,962	....	......	1,127,825,256	$60,137,962	1,110,134,528	$52,507,295
Ref'd.	34,779,800	2,603,202	32,741	$2,108	34,812,541	2,605,310	27,033,700	1,902,290
Coffee, raw	1,980,722	296,378	584,749	95,190	2,565,471	391,568	2,717,028	418,607
Fruits & nuts *	....	8,179,178	....	176,217	....	8,355,395	....	6,889,705
Rice	3,527,846	165,779	....	....	3,527,846	165,779	3,671,943	143,120
Hides	1,481,717	295,216	3,120	749	1,484,837	295,965	1,411,873	259,623
Other	....	2,690,282	....	350,544	....	3,040,826	....	2,493,691
Total	1,169,595,341	$74,367,997	620,610	$624,808	1,170,215,951	$74,992,805	1,144,969,067	$64,614,331

* Mostly pineapples.

Hawaii and New York previously carried on by this company was suspended. The Matson Navigation Company handles a larger part of the traffic, freight and passenger, between the Territory and the Pacific coast. It operates 309 steamships. In addition to these lines, several of the large oil companies in the United States operate vessels between the mainland and the Territory. These were devoted to the carrying of oil chiefly for fuel purposes. The transportation with Asiatic countries is maintained by the Pacific Mail Steamship Company, the China Mail Steamship Company, and the Toyo Kisen Kaisha of Japan. The Canadian-Australian Royal Mail line operates passenger and freight steamers which may stop at Honolulu. Several other important lines make regular stops at this port.

The total steam railway mileage of the Territory in 1917 was 312. The line having the longest mileage was on the Island of Oahu. The total number of passengers carried on the road in 1917 was 1,621,685. The freight carried amounted to 1,223,746 tons. There were 595 miles of private railway leading to plantations.

EDUCATION. The total number of pupils enrolled in the public schools at the end of the fiscal year was 32,282, an increase of about 7 per cent over 1916. The total number of schools was 168. The teachers numbered 855, 716 female and 139 male. The average daily attendance during the year was 30,293. Of the total number attending school, 13,804 were Japanese, 4744 Portuguese, and about 7000 Hawaiians and part Hawaiians. The total expenditure for school purposes was $898,047.

In addition to the regular schools, there are in the Territory 137 Japanese schools given over to the teaching of the Japanese language and other subjects peculiarly Japanese. These were attended by about 14,000 Japanese pupils.

There were enrolled in the College of Hawaii during the year, 110 pupils, of whom 79 were Caucasian and 13 Chinese. The remainder were Japanese, Hawaiian, Korean, and Hindu. The faculty included 12 professors and about 20 assistants.

FINANCE. The assessable property of the Territory on June 1, 1917, was $231,920,919, an increase of $25,000,000 over the value of the previous year. At the beginning of the fiscal year, there was a cash balance of $539,388. The receipts amounted to $5,944,752, and the disbursements to $5,689,735, leaving a cash balance at the end of the year of $794,406. The bonded debt of the Territory was decreased $150,000 during the year, and at the end amounted to $7.874,000.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include two industrial schools, one for boys and one for girls. These include, receive, and care for all the delinquents of all ages and nationalities who are not paroled or put on probation by the Juvenile Court in Honolulu, or by the judges of other courts sitting as juvenile judges. A Detention Home was established during the year to care for children awaiting trial, dependents not yet provided for, and in some cases paroled juveniles. There are two Territorial Reform Schools, and a Territorial prison. A new prison building was under construction during the year.

HEALTH AND SANITATION. The Territorial Board of Health has general supervision over the public health work in the Territory, although some is handled by the local governments. During the past year the health condition was good. The government employs twenty-five physicians, who, during the year, visited over 10,000 homes, and examined 18,185 school children. The principal considerations of the board of health are: Leprosy, tuberculosis, sanitation, and pure food. During the year there were 1864 contagious and infectious diseases. A rat and mosquito campaign was carried on during the year with satisfactory results. An efficient system of medical inspection is carried on in the public schools. There were three cases of plague during the year, all of which terminated fatally.

POLITICS AND GOVERNMENT. Owing to the position of Hawaii as the largest military outpost of the United States, there was great activity in the Territory following the declaration of war with Germany. The National Guard of Hawaii was brought in numbers and plan of organization to the maximum which could be obtained under voluntary service. Three regiments were organized with the minimum number in Hawaii, Maui, and Kauai. In Oahu a regiment of maximum numbers and other detachment units were organized. These organizations policed the islands, thus relieving the regular army of this duty. At the outbreak of the war there were eight war-bound German merchant vessels and gunboats interned in the port of Honolulu, and in addition several merchantmen in the port of Hilo. These were all seized by the United States Navy Department upon the declaration of war, and the greater part of them were at once under commission.

LEGISLATION. The ninth legislature of the Territory commenced its biennial session on February 21, and remained in session for sixty days. Among the laws of importance enacted were the following: A commission was created to increase, conserve, regulate, and control the food supply of the Territory; the banking laws were revised; the pay of teachers in the public schools was made a minimum of $40 a month; the laws for the parole of prisoners were amended; an elaborate insurance law was provided for; provision was made also for a school for the blind and other defective children; the voting of citizens absent in the army and navy was provided for.

TERRITORIAL OFFICIALS. *Executive:* L. E. Pinkham, Governor; C. P. Iaukea, Secretary; I. M. Stainback, Attorney-General; C. J. McCarthy, Treasurer; B. G. Rivenburgh, Commissioner of Public Lands; C. R. Forbes, Superintendent of Public Works; H. W. Kinney, Superintendent of Public Instruction; M. G. K. Hopkins, Auditor; W. E. Wall, Surveyor; W. P. Jarrett, High Sheriff; Will Wayne, Private Secretary to Governor. *Delegate to Congress:* J. K. Kalanianaole.

HAY. The 1917 hay crop of the United States according to the Department of Agriculture was 94,930,000 tons, produced on 69,988,000 acres. The production of tame hay was 79,528,000 tons, grown on 53,516,000 acres, the average yield per acre being 1.49 tons, and the production of wild hay, 15,402,000 tons from 16,472,000 acres, or at the rate of 0.94 ton per acre. The total value of the cultivated hay crop at $17.09 per ton, the average farm value received December 1, 1917, was $1,359,-

491,000, the highest ever recorded. The crop of wild hay at $13.49, the corresponding price per ton, was valued at $207,834,000, making a total value of $1,569,325,000 for the two crops. It was estimated that about 24.4 per cent of the tame and 18.1 per cent of the wild hay crop would be baled, making 18,638,000 and 2,751,000 bales, respectively.

On May 1, 1917, the stocks of hay of the 1916 crop on farms amounted to 12,488,000 tons. The leading States in acreage in 1917 were Nebraska, New York, South Dakota, Minnesota, Iowa, Missouri, Pennsylvania, and Kansas, representing over 40 per cent of the total area. The blue grass crop of Kentucky was very light and the seed production was only about one-third normal. The total yield of all hay in Canada, surpassed only in 1911 and 1916, was placed at 13,379,000 tons from 7,824,000 acres and was valued at $160,000,000. England and Wales reported a total production of 7,550,000 tons, or 1,280,000 tons less than in 1916 but nearly 1,000,000 tons more than in 1915. The clover seed crop of Italy was short partly as a result of dry weather but mostly on account of cutting the crop for forage before the seed was ripe. Owing to a backward season the price of hay in Holland reached $48 per ton during the late spring of this year. Reports regarding the hay crop of other countries were not available.

HAYES, Edwin Louis. An American soldier, oldest of surviving Civil War generals, died in Verona, N. J., January 1, 1917. He was born at Ellicottsville, N. Y., in 1820, a cousin of the future president, Rutherford B. Hayes. From a captaincy in the Northwestern Rifles, he was transferred shortly after the beginning of the Civil War to the 44th Illinois Volunteers. He soon rose to be major, and by 1863 was lieutenant colonel of an Ohio regiment, but was captured the same year and sent to Libby prison. There he remained eleven months, during which time he helped build the famous underground passageway by which a number of Union men escaped, but which rheumatism prevented him from utilizing. Later, after further confinement in Belle Isle and Andersonville prisons, Hayes participated with distinction in the battles of Franklin and Marshville, and was promoted colonel and then brevetted brigadier general. His administration of confiscated property at Wilmington, Del., brought him an appointment from President Lincoln as Reconstruction Governor of North Carolina. After five months he was sent north to look after confiscated property in New York City. Here he was credited with saving the government millions of dollars. General Hayes entered business as a commission merchant and later dealt in stocks and bonds, not retiring till after he was 90 years old. He helped to found the Republican party.

HÉBERT, Louis Philippe. A Canadian sculptor, born at Sainte-Sophie d'Halifax, Quebec, in 1850, who died on June 10, 1917. He studied in Montreal, Rome, and Paris, where he later settled. In 1882 he won the prize offered by the Canadian government for the statue of Sir Georges Cartier (Ottawa); he was elected to the Royal Canadian Academy in 1883 and won the Confederation medal presented by the government in 1894. His principal works are the bronze statues of Maisonneuve (his most popular work) and five others in Montreal; the Cartier, Mackenzie, Macdonald, and Queen Victoria monuments in Parliament Square, Ottawa; the Laval Monument, Quebec; and the Home Monument, Halifax.

HEIFETZ, Jascha. See Music, *Artists*, Instrumentalists.

HELMERT, Friedrich Robert. A German geodesist, who was born at Freiberg, Saxony, in 1843, and who died on June 15, 1917. He was educated at the Polytechnic of Dresden and Leipzig University; in 1869-70 was observer in the Hamburg Observatory, and in the latter year became instructor in geodesy in the Technical College of Aix-la-Chapelle. In 1886 he was appointed director of the Royal Geodetic Institute of Prussia, and in 1887 professor of geodesy in Berlin University. In addition to contributions to various technical periodicals, he published among other works: *Die Ausgleichungrechsnung nach der Methode der Quadrate; Die mathematisohen und physikalischen Theorien der höhern Geodäsie; Beiträge zur Theorie des Reversionspendels; Schwerkraft und die Massenverteilung der Erde.*

HENGELMÜLLER, VON HENGERVÁR, Ladislaus, Baron. An Austrian diplomat, died at Abbazia, Istria, in April, 1917. He was born in 1845 and early entered the diplomatic service. He is said to have been responsible for establishing friendly relations between Count Karolyi, then Austrian ambassador in London, and Mr. Gladstone, who had just become premier (1880) soon after violently attacking Austrian Balkan policies. Baron Hengelmüller was for many years Ambassador to the United States, coming as minister in 1894 and leaving in 1912 to be succeeded by Dr. Constantin Dumba. He wrote several books, among them *Hungary's Fight for National Existence.*

HEREDITY. See Zöology.

HERTLING, George F. von, Count. German chancellor. Count von Hertling was born in Darmstadt in 1843. He studied at Münster, Münich, Berlin, and in Italy, and in 1882 became a professor of philosophy at Bonn. He served in the Reichstag from 1875 to 1890 and from 1896 to 1898. In 1912 he was made Bavarian minister of foreign affairs and prime minister. In September, 1917, he became chancellor of the German Empire. See War of the Nations, *The Diplomacy of the War.*

HERZEGOVINA. The southern part of the Austro-Hungarian territory of Bosnia and the Herzegovina. It is situated between southern Dalmatia and Montenegro. See Bosnia and the Herzegovina.

HESSE. A grand duchy of western Germany, consisting of detached parts and forming one of the constituent states of the empire. Capital, Darmstadt. Area, 2968 square miles. The population at the census of December 1, 1910, was 1,282,051, as compared with 1,119,893 in 1900, 817,000 in 1864, and 562,000 in 1816. The average annual increase was 0.88 per cent from 1816 to 1910, and 1.35 per cent from 1900 to 1910. In the latter year, communes having upwards of 2000 inhabitants aggregated a population of 776,263. Evangelicals numbered 848,004 (66.15 per cent); Roman Catholics, 397,549 (31.01 per cent); other Christians, 6707 (0.52 per cent); Jews, 24,063 (1.88 per cent). Hesse has a bicameral diet. The grand duke in 1917 was Ernst Ludwig, born in 1868 and succeeded his father, Ludwig IV, March 13, 1892.

HIDES. See LEATHER.

HIGH PRESSURE FIRE SYSTEMS. See FIRE PROTECTION.

HIGH SCHOOLS. See EDUCATION IN THE UNITED STATES.

HIGHWAY IMPROVEMENT. See ROADS AND PAVEMENTS.

HINSHAW OPERA PRIZE. See MUSIC, *Opera*.

HISTORICAL ASSOCIATION, AMERICAN. A national organization for the promotion of historical studies. The thirty-third annual meeting of the association was held at Philadelphia, Pa., December 27-29, 1917. At the same time the following societies and associations met: American Archæological Institute, American Economic Association, Association of the History Teachers of the Middle States and Maryland, Mississippi Historical Association, American Philological Society, American Political Science Association, and the American Sociological Society. At the sessions of December 27, among the leading topics discussed were: "The Background of American Federalism," by Andrew C. McLaughlin; "The Significance of the North Central States in the Middle of the Nineteenth Century," by Frederick J. Turner; and "Relations between the United States and Mexico, 1867-84," by Herbert E. Bolton. A joint subscription luncheon was given by the American Historical Association and the Political Science Association at the Bellevue-Stratford, followed by an address on "A Government Experiment in War Publicity," by Guy Stanton Ford. The Historical Society of Pennsylvania held a conference of archivists, and at different meetings and joint sessions ancient, general, English, and American historical subjects were discussed. In the evening a dinner was given for the women members of the American Historical Association. The presidential address on "The Editorial Function in American History," was made by Worthington C. Ford. There was a reception and supper by the Historical Society of Pennsylvania to the members of the American Historical Association.

On December 28 there were joint sessions on Mediæval Church History and American History, and conferences on Military History and War Economies. At a meeting devoted to Recent Russian History, Alexander Petrunkevitch of Yale University gave an address on "The Rôle of the Intellectuals in the Liberating Movement in Russia." In the evening there was a general session of the Historical Society of Pennsylvania. On the closing day, December 29, a conference of historical societies was held and a paper was read on "The Relation of the Hereditary Patriotic Societies and the Historical Societies, with Especial Reference to Coöperation in Publication," by Judge Norris S. Barratt. The paper was followed by a discussion. A Conference of Teachers of History was held, also conferences on Far Eastern History and South American History. In the evening there was a joint session with the American Economic Association, the Political Science Association, and the American Sociological Society. The publications issued in 1917 were: *Annual Report for 1914*, volume I; *The Leveller Movement*, by Theodore C. Pease (essay awarded Herbert Baxter Adams prize, 1915). The officers elected in 1917 were: President, William Roscoe Thayer; first vice-president, Edward Channing; second vice-president, Jean Jules Jusserand, French Ambassador to the United States; secretary, Waldo G. Leland; treasurer, Charles Moore.

HITCHCOCK, GILBERT M. See UNITED STATES AND THE WAR.

HOBSON, JOSEPH. A Canadian engineer who was born in Guelph, Ontario, in 1833, and who died December 19, 1917. He studied surveying and engineering and entered the service of the Grand Trunk Railway as an assistant engineer on construction west of Toronto. He afterward became assistant engineer on several lines, in Nova Scotia, Ontario, and Michigan; was resident engineer of the International Bridge, Buffalo (1870-73); was appointed chief engineer of the Great Western Railway (1875); and from 1896 until 1907, when he retired, he was chief engineer of the Grand Trunk Railway system. In 1890-91 he built the St. Clair Tunnel, Ontario, and in 1897 had entire charge of the reconstruction of the Victoria Jubilee Bridge, Montreal.

HOCKEY. The Seattle Metropolitans of Seattle, Wash., won the Stanley Cup, emblematic of the professional hockey championship of the world by defeating Les Canadiens, champions of the National Hockey Association. The Metropolitans captured three of the four games contested and earned the distinction of being the first United States hockey team to gain possession of the famous trophy. The scores were: Les Canadiens 8, Metropolitans 4; Metropolitans 6, Les Canadiens, 1; Metropolitans 4, Les Canadiens 1; Metropolitans 9, Les Canadiens 1. Four teams entered the series played for the American Amateur Hockey League title, the laurels going to the Boston Athletic Association for the second year in succession. The Boston players met with only one defeat, that at the hands of the Crescent Athletic Club of New York City, in the six games played. The final standing of the other sevens was: Crescent A. C. won 4, lost 2; Arena Hockey Club, Boston, won 2, lost 3; Irish-American Athletic Club, New York City, won 0, lost 5.

A feature of the season was the inter-city series between New York and Boston women players. The first game contested in Boston was won by the Hub seven, the score being 3 to 2. The New York aggregation took the second game played in New York by a score of 1 to 0. The third and deciding game also played in New York was won by the home team, the count being 3 to 2.

A triple tie existed for the intercollegiate championship. Yale won two of the three games played with Harvard; Harvard defeated Princeton twice; while the Tigers took two of their three games with Yale. Dartmouth, which played only one game each with Yale, Harvard, and Princeton, won from Yale and Princeton and lost to Harvard.

HOG CHOLERA. See VETERINARY MEDICINE.

HOGS. See GARBAGE AND REFUSE DISPOSAL.

HOLLAND. See NETHERLANDS.

HOLTON, HENRY DWIGHT. An American sanitarian, died February 12, 1917, in Brattleboro, Vt. Born at Rockingham, Vt., in 1838, he graduated in 1860 from the University Medical College in New York, and returned to be identified with his native State for the rest of his life. In the Civil War he served as surgeon of the 12th Vermont Volunteers. From 1873 to 1886 he was professor of pathology and therapeutics in the University of Vermont, and during part of this time also medical examiner for the Vermont Asylum for the Insane. From 1897 he was secretary and executive officer of the State Board of Health. Previously he had seen something of political life as a member of the State Senate and House of Representatives and as delegate to the Republican National Convention of 1896. At 31 Dr. Holton was president of the Connecticut River Valley Medical Society, and he received numerous other honors, serving at various times as president of the Vermont State Medical Society, the American Congress of Tuberculosis, and the American Public Health Association, as vice-president of the American Medical Association, and as president of the board of trustees and chairman of the executive committee of the Pan-American Medical Congress of 1893. As a leading promoter of the public health movement he gained an international reputation, and was elected to various foreign as well as American scientific societies. He published articles and monographs and *Posological Tables* (2 eds.).

HOLY CROSS, College of the. An educational institution for men conducted under the direction of the Roman Catholic Church, located at Worcester, Mass. In the fall of 1917 there were 621 students and twenty-nine members of the faculty. About thirty students left college in 1917 to enter government service. Volumes in the library numbered 42,000. Productive funds in 1917 amounted to about $100,000 and income therefrom to $4000. The College of the Holy Cross was founded in 1842. President, Rev. Joseph N. Dinand, S. J.

HOME GARDENING. See Agricultural Extension Work.

HOME RULE. See Great Britain, *History*.

HONDURAS. A Central American republic. Capital, Tegucigalpa.

Area, Population, etc. The estimated area is 114,670 square kilometres (44,274 square miles). The population is estimated at about 650,000, but this figure may be a little too high. The 1910 census returned 553,446 inhabitants. Most of the people are Indian. The largest town is Tegucigalpa, with perhaps 30,000 inhabitants.

Elementary instruction is free and nominally compulsory. In 1915, there were 922 elementary schools, with 37,786 pupils enrolled; in 1916, the number of schools was 865, teachers 1083, and children of school age 73,257. There are a few institutions for secondary and professional education. The normal and commercial schools at Tegucigalpa in 1916 had 540 and 191 matriculates respectively.

Production, Commerce, etc. The most important crop commercially is bananas, which are cultivated especially along the Caribbean coast. The corn crop provides the staple food of the people. Other crops are sugar cane, tobacco, coffee, coconuts, rice, beans, millet, and yucca. In some parts of the country, cattle raising is a profitable industry. Some gold and silver are mined, but there is little other development of the large mineral resources.

In the year 1914-15, imports and exports respectively were valued at 16,153,500 and 8,640,932 pesos silver (equivalent to $5,874,000 and $3,142,157 with the gold premium at 175); in 1913-14, imports 16,562,325 pesos and exports 8,553,327 pesos (equivalent to $6,624,930 and $3,421,331 with the gold premium at 150). Foreign trade is almost wholly with the United States. The chief export is bananas.

Length of railway reported in operation in 1917, 579 kilometres (360 miles). The most important railway is the National, which extends from Puerto Cortés to Potrillos. Telegraphs (1915), 7830 kilometres (4865 miles) of wire; post offices, 278.

Finance. The legal standard of value is silver. The monetary unit is the peso, of 25 grams of silver, .900 fine. With the rapid rise in the price of silver in 1917, this coin advanced in value, being worth about 71 cents on October 1. On the same date, peso bank notes were worth about 40 cents. Revenue is derived chiefly from customs and from monopolies of spirits, tobacco, and explosives. For the year ended July 31, 1916, reported revenue and expenditure were 5,271,103 and 5,193,989 pesos silver respectively, as compared with 6,682,891 and 6,461,467 for the fiscal year 1915. The reported foreign debt, with arrears of interest (unpaid since 1872), stood at £25,871,222 December 31, 1916. Internal debt July 31, 1916, 4,016,332 pesos silver.

Government. The legislative power is exercised by the Congress of Deputies, consisting of forty-two members elected for four years by direct vote. The executive authority is vested in a president, assisted by a cabinet; the president is elected for four years by direct vote and is not eligible for the next term. President for the term beginning February 1, 1916, Francisco Bertrand.

HONGKONG. An island (about 32 square miles) off the southeast coast of China, at the mouth of the Canton River, which, with a strip of territory on the mainland leased from China (376 square miles) and about four square miles of the Kowloon Peninsula, forms a British colony. Civil population (1911), 456,739 (Chinese, 444,664); 1915 estimate, 509,160. Capital, Victoria (219,755). This island is the centre of an enormous trade. Being a free port, no trade returns are available.

There is little land suitable for tillage on the island, though in the leased territory the Chinese cultivate considerable tracts. Granite quarries are worked, and various manufactories are operated. Shipbuilding and repairing are important industries.

HOOKWORM. The investigations of the International Health Board of the Rockefeller Foundation brought to light a source of continuous reinfection by hookworm in the Chinese miners. More than a hundred thousand miners were employed in the mines of Hunan Province alone and they were recruited mainly from farmers who worked barefooted in the moist, larva-infected soil, which was fertilized, according to Chinese practice, by human excrement. Thus the disease was carried back and forth in a way that was difficult to remedy. In the United States Dr. Cumming, director of the Bureau of Communicable Diseases, and of the California State Board of Health, and Joseph H. White of the United States Bureau of Mines, studied hookworm disease as it occurred in the deep gold mines of California. About 40 per cent of miners working in some of the mining districts of California, contract the disease, which is endemic in these localities. While the ultimate source of the infection had not been determined the immediate source was of course the careless disposition of human excrement. The soil in mines very soon becomes polluted with hookworm larvæ which are capable of boring through the intact skin and gaining entrance to the body through the unprotected feet. Hookworm eggs were said to remain infectious for as long as a year after being evacuated, even when exposed to changes of temperature and sunlight on the surface of the ground; but in mines they appear to remain infectious for an even longer period, because temperature conditions are uniform. Cumming and White recommended that the feet of miners be well protected by intact shoes, that every employee should be examined for hookworm infection; and that those found infected should undergo treatment until cured. Moreover, all miners should be reëxamined yearly and no applicant for work employed unless he is absolutely free from the disease. It was also urged that miners should be instructed in the cause and means of prevention of hookworm disease, so that they may take proper precautions.

Hookworm disease appears to be very prevalent in Siam. According to Dr. M. E. Barnes, 7577 individuals were examined during the six months ending August 31, 1917, of whom 5669 were found to be infected and 3614 of them were put under treatment.

HOOVER, Herbert C. National Food Administrator. Herbert C. Hoover was born at West Branch, Iowa, on August 10, 1874. He was graduated from Leland Stanford University in 1895 and immediately began his profession of mining engineer, beginning as a common laborer. He rose rapidly and became wealthy through his development of gold mines in Australia. Later he was engaged in exploration in China, when the Boxer rebellion broke out. He and his wife were among those who defended Tien-Tsin during the siege. From that time until the outbreak of the war he lived in London, carrying on mining enterprises in Burmah, Mexico, Australia, China, California, and Russia. With the war came a call for him to head the Commission of Relief in Belgium. He faced a very serious problem. He had to feed and clothe men, women, and children on very limited resources and under adverse conditions. When the United States declared war President Wilson offered him the post of Food Administrator. At first he declined to accept it, but later reversed his decision. See United States.

HOPS. The world's hop production and trade in 1917 were very much upset by the war of the nations. The markets of enemy countries were closed to each other, and the demand for hops and hop products had further fallen off as the result of the reduction in brewing in several of the more important beer consuming countries. Beer production in Germany and Austria during 1917 was reported as only about 50 per cent normal. Lupulin or hop meal, a fine, yellow, resinous powder obtained from hops and used by brewers and also by the drug trade, is manufactured largely in Austria, which in normal times exports about 15,000 pounds annually, mostly to the United States and Sweden; but owing to the interruption of international communication the product practically disappeared from the world's market.

The available figures relative to European hop production in 1917 were limited to England where the yield amounted to about 225,000 hundredweights. In the United States the yield, as estimated by the Department of Agriculture, was 27,788,000 pounds, as compared with 50,595,000 pounds in 1916. Only 29,900 acres, or 14,000 acres less than the preceding year, were devoted to the crop. The average farm value of the crop, December 1, 1917, was 33.7 cents per pound as against 12 cents the year before, and on this basis the total value reached $9,363,000, being greater by $3,290,000 than the value of the preceding crop. Of this year's yield, California produced approximately 58 per cent, Oregon 18 per cent, Washington 17 per cent, and New York 6 per cent. The consumption of hops by brewers in this country for the year ending June 30, 1917, amounted to approximately 42,000,000 pounds. By December 1, 1917, fully 80 per cent of the year's crop had passed from the producers' hands at the highest price since 1882.

See Liquors.

HORTICULTURE. Weather conditions in 1917 were not conducive to a general heavy yield of fruits and vegetables either at home or abroad. Nevertheless the acreage yields as a whole were somewhat better than in 1916 and the total production of staple vegetables, owing to greatly increased plantings to meet war conditions, was far above normal. Increased cost of production and handling and congested railroads were largely responsible for the prevailing high prices, from which no relief was in sight at the close of the year.

Of the commercial vegetable crops in the United States, 442,536,000 bushels of white potatoes were produced in 1917 as compared with 286,953,000 bushels in 1916; sweet potatoes, 87,141,000 bushels as compared with 70,955,000 bushels; dry beans, 15,701,000 bushels as compared with 10,715,000 bushels; onions, 13,554,000 bushels as compared with 7,832,700 bushels; cabbage, 502,700 tons as compared with 252,310 tons; canned peas, 9,829,153 cases as compared with 6,686,000 cases; and canned corn, about 11,000,000 cases as compared with 9,130,000 cases. The total apple crop amounted to 58,203,000 barrels as compared with 68,194,000 barrels in 1916; peaches, 45,066,000 bushels as compared with 37,505,000 bushels; and pears, 13,281,000 bushels as compared with 11,874,000 bushels. A severe freeze in Florida together with frost, and scorching June weather in California reduced the orange crop from 24,433,000 boxes in 1916 to 12,832,000 boxes in 1917. For the shipping season ended October 31, 1917, California shipped a banner crop of 54,360 cars of citrus fruits as compared with 45,234 cars for the same period in 1916, and 24,344 cars of fresh deciduous fruits as compared with 18,000 cars in 1916. The increased shipments were due principally to large yields of lemons and grapes.

But few specific data on European production were available. The British Isles produced a large white potato crop of about 29,865,000 bushels, whereas other vegetable crops, especially beans, were short. There were large crops of grapes in Italy and parts of France.

Fruit production was generally better in the Mediterranean districts than elsewhere but transportation facilities were very poor.

Foreign Trade. For the fiscal year ended June 30, 1917, the United States exported fruits worth $37,653,160; vegetables, $22,290,710; nuts, $1,741,037; or a total of $61,684,907 as compared with $52,917,740 in 1916. The imports for the same period were: fruits, $25,315,943; vegetables, $29,150,889; nuts, $32,865,014; a total of $87,331,846 as compared with $55,257,800 in 1916. There were notable increases in exports of peanuts for oil extraction, 22,413,297 bushels as compared with 8,669,430 bushels in 1916, and of dried beans, peas, and canned vegetables to supply the allied armies. Export trade in many lines was restricted by an active home demand from the public and the newly-created fighting forces of the United States. To relieve the shortage in the United States 9,747,987 bushels of beans, peas, lentils, onions, and potatoes were imported, as compared with 2,628,484 bushels in 1916. Unprepared cocoanut meat to the amount of 247,036,099 pounds and shelled peanuts amounting to 27,180,748 pounds were imported in 1917, as compared with 110,077,844 pounds of cocoanut meat and 19,392,832 pounds of shelled peanuts in 1916. Nursery stock worth $3,955,709 was imported in 1917.

The orange, lemon, and citron peel trade of Canada was being furnished by American instead of European firms. The canning of evaporated vegetables had become an important industry in British Columbia. One factory had a contract for 1,000,000 pounds for the British army in 1917. Queensland shipped 10,000 cases of canned pineapples to England for the army. Citrus planting was rapidly increasing in Australia. Official statistics showed nearly 10,000 acres of oranges and 700 acres of lemons in Queensland, South Australia, West Australia, and Victoria. Japan entered the Australian trade with large shipments of dried fruits and nuts for the Christmas season. As a result of the hurricane in August, 1916, Jamaica's coconut, cacao, and banana crops were seriously reduced in 1917. A severe hurricane in September, 1917, blew down over 70,000 coconut trees and smaller numbers of other trees.

War Gardens. In order that the big commercial vegetable crops in America might be released, as far as possible, for army supplies, various government, State, and private agencies inaugurated a nation-wide home garden and home conservation movement early in 1917, the result being that some six and one-half million war gardens were carried on, covering more than a million and a half acres, fully three times the acreage in 1916. The produce from these gardens has been estimated at a value of $350,000,000. Experts in home economics assisted in special campaigns for the proper utilization and conservation of these supplies. The crowded cities were not neglected and unusual supplies of vegetables and fruits were canned and dried in homes where no garden space was available.

Aggressive campaigns were also conducted in Great Britain, in connection with which small tracts were allotted, seed supplied, and assistance provided. A "panel of patriotic gardeners" numbering over 100 was formed by the Board of Agriculture in coöperation with the Royal Horticultural Society, to give free advice and instruction to allotment holders and production societies.

In France wide powers were conferred upon the authorities for promotion and development of private gardens and large numbers were also established by the municipalities, by labor organizations, by agricultural societies, and schools. In order to furnish an adequate supply of vegetables for the French army a great vegetable nursery was established at Versailles. In 1917, 25,000,000 plants of different vegetables were raised and distributed for culture by soldier labor in the immediate vicinity of the armies and at depots and garrisons. In 1918 it was intended to produce 150,000,000 plants in addition to which about 30,000 tons of seed potatoes and 1200 tons of seeds other than potatoes were to be sown directly in the gardens in the rear of the armies. The total cost of producing 25,000,000 plants in 1917 was 40,798.5 francs or $7874.11; the amount realized by the soldiers' gardens represented upwards of $2,500,000. It was proposed to establish a similar plant nursery for the English soldiers. In some cases a divisional agricultural officer was appointed, and millions of cabbages, etc., were planted by soldiers in the ruined districts of France and Belgium.

Marketing Fruits and Vegetables. The Bureau of Markets of the Department of Agriculture arranged to investigate and certify to shippers the condition as to soundness of fruits and vegetables and other food products when received at important central markets. The inspection service was inaugurated in twenty-four of the large markets. Data on the carload movements of fruits and vegetables and of live stock, now embracing returns from approximately 1000 officials, are telegraphed daily by more than 400 different railroads. A coöperative experimental reporting service was begun early in the year in the large wholesale farmers' market at Providence, R. I., on fruits and vegetables grown in the neighborhood. The service was successful in stabilizing local prices and was extended to the markets at Boston and Springfield, Mass., Albany, N. Y., Cleveland, Ohio, Grand Rapids, Mich., St. Paul, Minn., and Denver, Colo.

The department greatly extended its investigations dealing with the improvement of refrigerator car equipment for fruits and vegetables. The results clearly demonstrated that with improved car construction, proper loading, and judicious salting the upper tiers can be cooled to a temperature as low or nearly as low as that usually maintained in the bottom tiers under ordinary refrigeration with the present equipment. The freezing investigations proved that a little more insulation with the provision of floor racks will eliminate over 90 per cent of the freezing now occurring in the shipment of citrus fruits from California. They also indicate that, as regards economy and efficiency the year round, proper car construction and insulation will pay better than the installation of expensive and uncertain heater equipment that is useful only during the freezing season.

The department found that the time elasping between the first appearance of corn silks and the stage when the ear is in prime table condition is practically constant for all varieties tried, sixteen days, so that by marking, the ears

From American Forestry

EMPLOYEES' GARDENS OF THE OLIVER CHILLED PLOW COMPANY, SOUTH BEND, IND.

From American Forestry

EMPLOYEES' GARDENS OF THE GLOBE MACHINE AND STAMPING COMPANY WHERE 22 VARIETIES OF VEGETABLES WERE PRODUCED

WAR GARDENS OF EMPLOYEES OF INDUSTRIAL PLANTS

may be harvested at the proper stage without opening the husk to judge of maturity.

Experiments at the Massachusetts Experiment Station indicated that cut asparagus stalks might be held for a week with very little deterioration in quality by placing the stalks under refrigeration, below 45° F., and in a close atmosphere to prevent evaporation. Recent experiments conducted by the Department of Agriculture showed that sweet potatoes best were stored at a temperature of from 55° to 60° F. The average shrinkage in three standard varieties stored at these temperatures for 152 days was 12.5 per cent.

Protection of Fruit Against Late Spring Frosts. A new product, "agelarine" (antifrost), appears to have been successfully used in France for coating fruit trees before the blossoms appear, thereby retarding their blooming period several weeks without injuring the buds. Agelarine, which is patented and protected by the French government, is said to be a vegetable derivative compounded from plant juices. It is applied with an ordinary spray pump and assumes a waxy consistency when exposed to the air.

Promising Fruits and Plants. Noteworthy fruit introductions, tested on the New York State Experiment Station grounds and reported on in 1917, include the J. H. Hale and Pearson peaches, Drap d'Or plum, Empire raspberry, and Good Luck strawberry. New varieties of trees and plants sent out for trial under northern prairie conditions by the South Dakota Experiment Station included the Ivan and Dolgo crab apples, Sereda, Adno, and Hibkee apples, some seeding plums, a Turkestan radish and Siberian muskmelons and watermelons collected by N. E. Hansen, Siberian forms of almond, buckthorn, and Lavatera, Manitoba hazelnut, and the New Ulm black walnut. Coöperative experiments reported by the Hawaii Experiment Station showed that Chinese litchi seed for propagating purposes may be shipped in good condition from Hawaii to southern Florida where litchi culture is being established. The Department of Agriculture developed a number of varieties of chestnuts which showed considerable promise as nut-producing trees. Especially promising results were obtained with hybrid chinkapins.

The department also successfully developed some strains of sweet corn that possessed a satisfactory degree of worm resistance and which, it is believed, should bring about the extension of sweet corn production in the South, where at present the ravages of the corn ear worm practically prevent its cultivation.

Institutions, Societies, etc. The University of London established a B.Sc. degree in horticulture, and had under consideration the recognition of the Royal Horticultural Society's school and research station at Wisley as a school of the university. The new experimental farm at Morden, South Manitoba, was to be devoted largely to experimental work in horticulture. A tract of about 285 acres of land had been secured. The Pennsylvania College was to develop a tract of sixty acres as a means of furnishing instruction in commercial fruit growing. The Oregon College was erecting a horticultural products building to be equipped with the view of studying problems in food conservation. C. G. Woodbury, horticulturist at Purdue University and Station, was appointed as director of the station on September 1. Horace Cardinell, a 1914 graduate of the Oregon College, was appointed horticulturist for the Brazilian government for work in the comparatively undeveloped section of the country.

At the thirty-fifth annual session of the American Pomological Society, Boston, November 1, the society voted to establish a new class of membership to be composed of State, provincial, and district members. The State organizations were empowered to nominate vice-presidents of the society and send delegates to the annual conventions. Dr. L. H. Bailey was elected president for the ensuing year. The National Congress of Horticulture, meeting at the same place, took up for discussion and further consideration the establishment of a rational basis for making Federal farm loans on orchards. Mr. Horace Roberts was elected president of the Congress for the ensuing year. At the annual meeting of the Society for Horticultural Science, New York, December, 1916, it was voted to change the name of the society to The American Society for Horticultural Science.

Following protests by numerous scientific organizations and others, it has been decided to resume publication of the *Kew Bulletin*, which was suspended as a war economy measure a short time ago.

Necrology. Philippe le Veque de Vilmorin, the head of the world-renowned French seed house, Vilmorin-Andrieux and Co., of Paris, died June 30 at the age of 45 years. Parker Earle, retired pomologist, for 20 years president of the American Pomological Society died on January 12 in his eighty-fifth year. Arthur G. Gulley, for 23 years professor of horticulture at the Connecticut College, died August 16 at the age of 68 years. John Howard Hale, member of the Connecticut Public Utilities Commission, horticultural lecturer and writer, and one of the foremost apple and peach orchardists in the United States, died October 11 in his sixty-fourth year. Arnold V. Stubenrauch, professor of pomology at the University of California, and for many years pomologist in the United States Department of Agriculture, died on February 12 at the age of 46 years.

Bibliography. Among the contributions to horticultural literature in 1917 were the following: L. H. Bailey, *The New Standard Cyclopedia of Horticulture* (Vol. vi, New York); G. W. Johnson, edited by J. Fraser and A. Hemsley, *Johnson's Gardeners' Dictionary and Cultural Instructor* (new edition, London); F. A. Waugh, *The Natural Style in Landscape Gardening* (Boston); Prince von Pückler-Muskau, translated by B. Sickert, edited by S. Parsons, *Hints on Landscape Gardening* (Boston); C. V. Piper and R. A. Oakley, *Turf for Golf Courses* (New York); W. Trelease, *Plant Materials of Decorative Gardening: The Woody Plants* (Urbana, Ill.); P. Pacottet, *Viticulture* (3rd ed., rev. and enl., Paris); U. P. Hedrick et al., *The Peaches of New York* (New York State Station Rpt. 1916, pt. 2); S. W. Fletcher, *The Strawberry in North America* and *Strawberry Growing* (New York); J. G. Boyle, *Vegetable Growing* (Philadelphia and New York); F. W. Card, *Bush Fruits* (rev. ed., New York); E. N. Reed, *Late Cabbage* (New York); W. P. Wright, *A Book about Potatoes and other Vegetables* (London); Ellen E. Shaw, *Garden Flowers of Spring,* *Garden Flowers of Summer*, *Garden Flowers of Autumn* (3 vols., Garden City, N. Y.); M. Free, *Flowers of Winter Indoors and Out* (Garden City); Mrs. E. Harding, *The Book of the Peony* (Philadelphia and London); J. J. Taubenhaus, *The Culture and Diseases of the Sweet Pea* (New York).

HOSPITALS. In spite of the demands made on the public purse for war hospitals, a great number of new facilities for taking care of the sick have been undertaken and completed throughout the United States, some of the more important of which are mentioned below. In New York City the Rockefeller War Hospital was formally opened on July 12, in the presence of several of the directors of the medical departments of the United States government and their staffs. The institute is called the Rockefeller Demonstration Hospital and Dr. Simon Flexner and Alexis Carrel, among others, gave demonstrations, and outlined the purpose of the hospital, which is mainly the instruction of army and navy surgeons in the latest and most effective methods of treating the wounded.

The Sage Hospital Bill, which provides for the creation of a commission to develop and correlate the activities of various State hospitals for the insane in New York, was signed by Governor Whitman. The commission consists of the chairman of the State hospital commission, State engineer, State architect, chairman of the financial committee of the State legislature, and two other members. The bill carries appropriations of $20,000 for the expenses of the commission, $100,000 for new buildings at the Middletown State Hospital, and $299,255 to be applied in beginning construction of a new State hospital on the site acquired in 1911 at Marcy, near Utica.

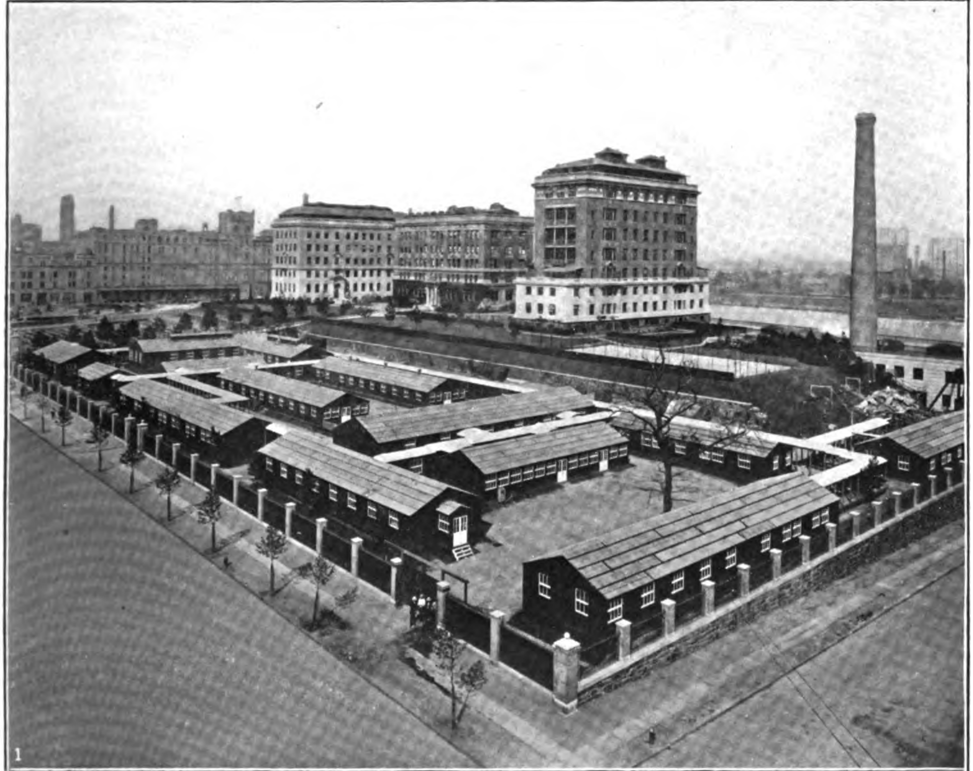
In Chicago a new municipal contagious disease hospital was opened on January 7. The building is five stories in height, and will probably be known as the Alfred C. Cotton Hospital. Four floors at present are devoted to scarlet fever patients. The Chicago Lying-in Hospital and Dispensary was opened on July 28. The institution is called the Joseph Hobart Moore Memorial, is seven stories in height, and has beds for 120 patients.

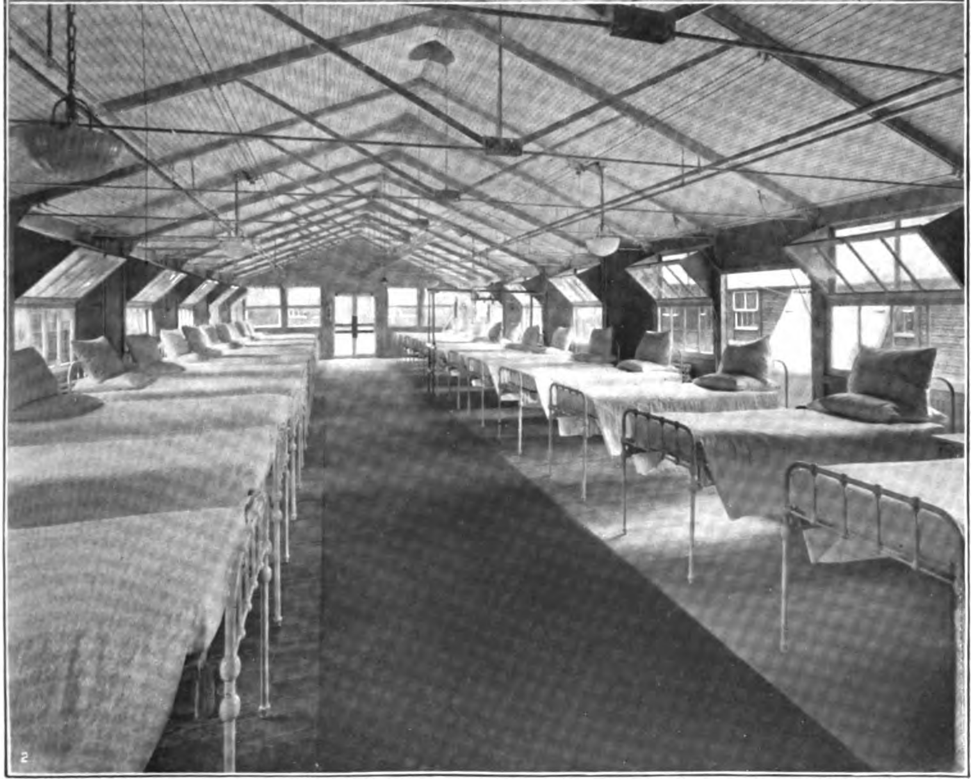
The new Iowa State hospital for epileptics was formally opened on September 3 at Woodward. Wisconsin made two additions to its hospital equipment, the first being an addition to St. Vincent's Hospital, Green Bay, erected at a cost of $75,000; the second the new St. Joseph's Hospital, Portage. The University of Nebraska Hospital, a four-story building, accommodating 120 patients, was opened on September 1. The new building of St. Joseph Hospital, Kansas City, Mo., was dedicated March 24. The structure cost $750,000, is seven stories in height, and is designed to care for 250 patients. A twenty-room addition to the Park Hospital, Livingston, Mont., was completed at a cost of $20,000. It has a bed capacity of fifty. A $100,000 addition to the Deaconess Hospital, Great Falls, Mo., was also completed.

Canada has opened a great many convalescent hospitals during 1917, owing to the necessity of taking care of great numbers of returned soldiers only partially cured. It is stated that the finest of these homes or hospitals in Canada will be the old Loyola College, Montreal, which has been altered for the purpose. It also will be the headquarters of the Canadian Hospital Commission. This commission will soon establish another hospital four miles from Montreal, to accommodate about 600 returned soldiers. It will be situated on eighty acres of ground and will be constructed of huts. The Brant House, formerly a summer hotel at Burlington, Ont., near Hamilton, was fitted up as a convalescent hospital, capable of accommodating 300 returned soldiers. In England on July 5 was opened the new extension of the Ontario Military Hospital, Orpington, Kent. This new extension doubles the capacity of the hospital, which will now accommodate 2800 patients.

The new Presbyterian Hospital at Santurce, Porto Rico, was opened with much ceremony, since it is probably thought to be the finest institution of its kind on the island. It is built entirely of concrete and cost $145,000. The new Panama Private Hospital with accommodations for fifty beds was opened. An imposing new hospital was erected in Madrid, Spain, through the munificence of Señora Curiel. The hospital and its grounds fill an entire city block, and beds are provided for 200 charity patients. The completion is reported of a new hospital in Peking, China, costing nearly $300,000, and planned by American architects. The building is fireproof and consists of three stories and basement. It is equipped with all the modern surgical and bacteriologic instruments, and is under the direction of Dr. Wu Lien-Teh, who was educated in Cambridge, England. The resident staff will be selected from Chinese graduates of medical schools of foreign countries as well as China, and all the other employees are to be natives. The Rockefeller Foundation has awarded contracts for the building of two hospitals to cost $3,000,000, and both will be for the work of the China Medical Board. The new Universitäts-Frauenklinik was opened in Munich. It is said to be the largest hospital for women in Germany. The building alone cost $750,000, and the equipment nearly one-third as much. The institute is to be under the direction of Professor Döderlein.

Among the great number of bequests and donations given to hospitals the following may be mentioned: St. Mary's Free Hospital for Children, New York City, $15,000; St. Luke's Hospital, New York City, $25,000 by the will of Miss Susan Mount; German Hospital, Philadelphia, $20,000; Polyclinic and Philadelphia Lying-in Hospital each $10,000 by the will of William P. Baltz; Long Island College Hospital, Brooklyn, a donation of $50,000 by friends of the late Dr. J. A. McCorkle; Columbia War Hospital, New York City, a donation of $175,000 from Mr. Daniel G. Reid; Gaylord Farm Sanitarium, Hartford, Conn., a donation of $100,000, from Mr. Henry H. McHarg; various hospitals in Vermont, Massachusetts, and Rhode Island, donations of $600,000 by Ira D. Calef; St. Luke's Hospital, Bethlehem, Pa., $90,000 from the Bethlehem Steel Company; St. Bartholomew's Clinic, New York City, $10,000; Morristown, N. J. Memorial Hospital, $100,000; Germantown Dispensary and Hospital, $100,000; St. John's Guild, New York City, $50,000; and the Babies' Hospital and St. Mary's Free Hospital for Children each $100,000 by the will of Mrs. Mary Warden Harkness. The New York Hospital was left a sum estimated at between $4,000,000 and $5,000,000, for the establishment of a urologic





1. GENERAL ARRANGEMENT OF BUILDINGS 2. INTERIOR SHOWING ONE OF THE WARDS

WAR HOSPITAL OF THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH

department, and Johns Hopkins Hospital, Baltimore, $200,000, both by the will of James Buchanan Brady.

The Polyclinic Hospital, New York City, received $47,767; New York Skin and Cancer Hospital, $23,883, by the will of Mrs. Mary Palmer Draper; The Pennsylvania Hospital for the Insane, a contingent bequest of $100,000, by the will of James Anspach; Flagler Hospital, St. Augustine, Fla., $125,000, by the will of Mrs. Robert Worth Bingham, to rebuild the hospital, which was burned in 1916; Orthopedic Hospital, Philadelphia, $30,000, by the will of Lillie G. Newton; Methodist Episcopal Hospital, Indianapolis, $75,000, from the estate of Mrs. Emma Messick; Lincoln Hospital and Home, New York City, $81,000, New York Orthopedic Dispensary and Hospital, $40,615, and St. John Guild, $240,000, by the will of Mrs. Helen Juilliard; Adirondack Cottage Sanatorium, New York, one-half the residuary estate of Robert W. Patterson, which is valued at about $1,000,000; Lakeside Hospital, Cleveland, $1,000,000, and St. Vincent's Charity Hospital, Cleveland, $200,000, by the will of Oliver H. Payne; St. Luke's Hospital, New York City, $100,000, by the will of Mrs. Ellen S. James; St. Vincent's Hospital, New York, $260,000, for a cancer hospital to be operated as a branch of the institution; Germantown Hospital, Philadelphia, a donation of $110,000, as a memorial for her daughters, by Mrs. William G. Warder; Montefiore Home and Hospital, New York, a donation of $100,000, by Jacob H. Schiff; Hahnemann Hospital, New York, $72,494, by the will of Juliet C. Percival; Hahnemann College and Hospital, Philadelphia, a bequest of $40,000, by the will of Marcus N. Darr; Children's Hospital, Milwaukee, a donation of $150,000 from Ferdinand Schlesinger, contingent on the raising of a like sum by the hospital association; Lakeside Hospital, Cleveland, $200,000, by the will of Washington S. Tyler. George F. Geisinger, Memorial Hospital, Danville, Pa., received an endowment of $1,000,000, by Mrs. Abigale E. Geisinger.

HOUSE, EDWARD M. See UNITED STATES AND THE WAR; and WAR OF THE NATIONS, *The Diplomacy of the War; Military Operations* (20).

HOWARD UNIVERSITY. A non-sectarian co-educational institution open to students without regard to race but known principally for the education of negroes. In the fall of 1917 there were 1063 students in the university, 266 in the academy, and 109 members of the faculty. Volumes in the library numbered 31,381. Productive funds in 1917 amounted to $309,413.71 and the income therefrom to $13,154.87. Additional income amounted to $187,258.61. Howard University was founded in 1867. President, S. M. Newman, A.M., D.D.

HOWLAND, WILLIAM BAILEY. An American publisher and publicist, died in New York City February 27, 1917. He was born at Ashland, N. Y., in 1849, and after graduating from Williston Seminary made a start in the newspaper business. He was owner successively of the Kinderhook *Advertiser*, the Chatham *Courier*, *Outing*, which he founded in 1882 and published for three years, and the Cambridge (Mass.) *Tribune*. In 1890 he accepted the business management of the *Outlook*, which he served for 23 years as publisher and part owner and which he helped to build up into a great national journal. In 1913 he became associated with Hamilton Holt in the control of the *Independent*. This periodical, under the broader policies pursued, increased its circulation from 23,000 to more than 100,000. The Independent Corporation, of which Mr. Howland was president, took over *Harper's Weekly* and incorporated it with the *Independent*, and purchased *Suburban Life*, which it renamed the *Countryside*. Mr. Howland's public services were many. He was one of the founders of the American Civic Association, and its treasurer from 1904 till his death. He was largely responsible for the movement to preserve Niagara Falls and their environs and became president of the Commissioners of the State Reservation established at the Falls. Moreover, he led in the movement to have Sulgrave Manor, the ancestral Washington home in England, preserved as a public shrine. Mr. Howland was long treasurer of the Congregational Home Missionary Society and of the Society for Italian Immigrants. From Toronto University he received the degree of LL.D. The American Institute of Graphic Arts elected him its first president and the American Periodical Publishers' Association its second president, and he was a life member of the National Arts Club, where a memorial meeting was held after his death.

HULL, EDWARD. A British geologist and physiographer, died November 26, 1917, at London. He was born in Antrim, Ireland, in 1829 and was educated at Trinity College, Dublin. Appointed to the Geological Survey of the United Kingdom in 1850, he became nineteen years later the professor of geology in the Royal College of Science. In 1883-84 he was the head of a scientific expedition to Palestine for the Palestine Exploration Fund. Much of the material gathered in this expedition was used in his *Physical Geology of Arabia Petræa and Palestine* (1886) and in his *Mount Seir, Sinai, and Western Palestine* (1905). His other published works include: *Building and Ornamental Stones* (1872); *The Coal Fields of Great Britain* (5th ed., 1905); *Physiology* (1888); *Physical Geology and Geography of Ireland* (2nd ed., 1891); *Volcanoes, Past and Present* (1892); *Our Coal Resources* (1897); *Sub-Oceanic Physiography of the North Atlantic Ocean* (1912). In 1910 he published his *Reminiscences of a Strenuous Life*. During the war he devoted much of his time to the work of the British War Coal Commission.

HUNGARY. A kingdom of central Europe, forming a part of the Austro-Hungarian monarchy. The area is 125,641 square miles, or somewhat more than the combined area of Iowa and Missouri. The population at the census of December 31, 1910, was 20,886,487, as compared with 19,254,559 in 1900. The kingdom consists of "Hungary proper" and Croatia and Slavonia. Sometimes Transylvania, the eastern portion of the country, is not regarded as a part of Hungary proper. Hungary proper, including Transylvania, has an area of 109,216 square miles; its population in 1910 was 18,264,533, as compared with 16,838,255 in 1900. The capital is Budapest, which, after Vienna, is the largest city of the monarchy. See AUSTRIA-HUNGARY; CROATIA AND SLAVONIA; TRANSYLVANIA.

HUSSEIN KEMAL PASHA, PRINCE. The first Sultan of Egypt after the declaration

(December, 1914) of a British protectorate over that country, died in the second week of October, 1917. He was a son of Ismail Pasha and was born about 1850. Hussein Kemal was unusually well educated in Egypt and Paris, where he was on intimate terms with the family of Napoleon III. He left the capital after the overthrow of the monarchy and afterward held a number of important posts in Egypt, such as inspector of Upper and Lower Egypt, minister of public instruction, of public works, the interior, war, and finance, which made him especially eligible for the position of sultan.

HUSTING, Paul O. United States Senator Paul O. Husting was accidentally shot and mortally wounded by his brother while duck shooting. He died on October 21, 1917. He was fifty-one years old, and was elected to the Senate in 1914 at the first direct senatorial election in Wisconsin. He was the grandson of Solomon Juneau, the first white settler on the site of Milwaukee and the founder of that city. Politically Senator Husting had been a loyal supporter of President Wilson and a bitter opponent of his colleague, Senator La Follette.

HYDE, William DeWitt. An American college president who was born at Wichendon, Mass., in 1858. He was graduated from Harvard in 1879 and from Andover Theological Seminary in 1882. Ordained to the Congregational ministry in 1883, he was a pastor at Newark, N. J., in 1883-85, and thereafter was president of Bowdoin College, also holding the chair of mental and moral philosophy. He was often referred to as the "Boy President." He is author of *Practical Ethics; Social Theology; Practical Idealism; God's Education of Man; The Art of Optimism; The New Ethics; The College Man and the College Woman; Self-Measurement; The Teacher's Philosophy In and Out of School; The Five Great Philosophies of Life; The Quest of the Best.*

ICELAND. A Danish crown colony. Area about 40,456 square miles, of which 16,245 square miles inhabited; population, 85,183. The trade in 1914 amounted to £555,944 imports, and £301,333 exports, the latter consisting of wool, dried fish, mutton, ponies, and sheep.

IDAHO. Population. The population of the State in 1910 was 325,594, and on July 1, 1917, it was estimated to be 445,176.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	22,000	682,000	$1,057,000
	1916	21,000	785,000	785,000
Wheat ...	1917	685,000	13,830,000	25,171,000
	1916	634,000	15,071,000	22,004,000
Oats	1917	275,000	10,450,000	8,046,000
	1916	310,000	13,330,000	7,198,000
Potatoes .	1917	39,000	6,084,000	4,806,000
	1916	27,000	4,050,000	5,144,000
Hay	1917	725,000	*a* 2,175,000	34,800,000
	1916	700,000	1,750,000	21,175,000

a Tons.

Mineral Production. The output of gold, silver, copper, lead, and zinc in the State in 1916 was $48,767,783, an increase of 46 per cent compared with the production in 1915. The gold production decreased $63,921, or more than 5 per cent. Silver increased nearly 5 per cent in quantity. Copper increased from 6,978,713 pounds in 1915 to 8,478,281 pounds in 1916. The great increase in the total value of the metal output amounted to 15,438,853, which was due to the increased price of metals. The production of lead was 375,081,781 pounds, an increase of 8 per cent. The production of zinc was 86,505,219 pounds, valued at $11,591,699.

The value of the mined output of gold, silver, copper, lead, and zinc in the State in 1917, according to the estimates of the United States Geological Survey, was about $54,000,000, an increase of more than $5,000,000 from $48,767-783 in 1916. There were decreases in quantity in all the fine metals except lead, in which there was a slight increase. The mined production of gold decreased from $1,115,810 in 1916 to $715,000 in 1917. The decrease was principally due to the fact that the large dredge at Idaho City was idle. The mined output of silver decreased from 12,300,873 ounces in 1916 to approximately 11,773,000 ounces in 1917. As the price of silver was much above that of 1916, the value of the output increased from $8,093,974 to $9,536,000. The production of copper decreased from 8,478,281 pounds in 1916 to about 6,753,000 pounds in 1917. The decrease in value was from $2,085,657 to $1,971,000. The mined output of lead increased from 375,081,781 pounds in 1916 to 383,000,000 in 1917. The value increased from $25,880,643 to $34,595,000. The mined production of zinc decreased from 86,505,219 pounds in 1916 to approximately 80,000,000 in 1917. The value decreased from $11,591,699 to about $7,336,000.

Transportation. The total railway mileage within the State on December 31, 1916, was 3591. There was practically no construction during 1917. The railways having the longest mileage are:—Oregon Short Line, 1973; Northern Pacific, 438; Chicago, Milwaukee, and St. Paul, 308; Spokane International Railway, 162; Oregon, Washington Railway, 159.

Finance. The report of the state treasurer for the fiscal year 1915, the latest for which statistics are available, showed a balance on hand at the beginning of the year of $246,350. The receipts were $3,054,903 and the disbursements amounted to $3,172,250, leaving a balance on hand at the end of the year of $1,132,047. The bonded debt of the State in this year amounted to $2,237,750.

Education. The total school population of the State in 1916-17 was 128,066. The total number of teachers was 3636 and the total expenditure for school purposes amounted to $3,926,788.

Charities and Corrections. The charitable and correctional institutions of the State include a Soldiers' Home at Boise, State Penitentiary at Boise, Insane Asylums at Black Foot and Orofino, and a State Sanitarium at Nompa.

Politics and Government. At the request of the secretary of state, the legislature decided not to press the anti-alien bills introduced into that body. These bills would have had the effect of preventing the Japanese from owning land in the State. This action was taken by Secretary Lansing following the protest on the part of the Japanese Ambassador. Senators Borah and Brady sent telegrams to the legislature urging the withdrawal of the bills on the ground that it was unwise to agitate the question at the present time.

On December 10, in a decision upholding the Prohibition Law of the State, the United States Supreme Court gave an opinion in which it was held that a citizen has no constitutional right to possess liquors for his own personal use if a State wishes to forbid it.

Legislation. Among the more important measures passed by the legislative session of 1917 are those noted below.

Provision was made for extending the benefit of the university extension department to convicts. Provision was made for the voting of citizens of the State absent in the national service. Acts were passed carrying into effect the prohibition amendment hitherto adopted by the people. It was made a felony to adopt criminal syndicalism or terrorism as a means of accomplishing industrial or political reform. Provision was also made for the imprisonment of a person who wilfully drives a metallic substance into timber intended to be manufactured into lumber.

A workingman's compensation law was passed. Legislation was passed looking to the prevention of monopoly and unfair discrimination in the buying and selling of commodities, especially food products. Laws were enacted providing for the inspection and regulation of the selling of gasoline and similar products. It was made a misdemeanor to use trading stamps as an inducement to the purchasing of goods of various sorts. General provision was made for the establishment of a teachers' retirement fund.

State Officers. Governor, Moses Alexander; Lieutenant Governor, Ernest L. Parker; Secretary of State, William T. Dougherty; Auditor, Clarence Van Deusen; Treasurer, John W. Eagleson; Attorney-General, T. A. Walters; Superintendent of Public Institutions, Ethel E. Redfield—all Democrats except Eagleson and Redfield.

Judiciary. Supreme Court: Chief Justice, Wm. M. Morgan; Associate Justices, Alfred Budge and John C. Rice; Clerk, I. W. Hart.

IDAHO, University of. A co-educational State institution of learning at Moscow, Idaho. In the fall of 1917 there were 864 students and 85 members of the faculty. Volumes in the library numbered 40,000. The university is operating under a legislative appropriation of $760,000 and government funds (Morrill, Hatch, Adams, Smith-Lever) for the biennial period January 1, 1917, to December 31, 1918. In 1917 Dr. E. M. Hulme was made dean of the College of Letters and Science; F. A. Thomson was made dean of the School of Mines; F. G. Miller was made dean of the School of Forestry; Dr. Ernest H. Lindley, formerly professor of philosophy and psychology at Indiana University, was chosen president. The University of Idaho was founded in 1889.

IHNE, Ernst Eberhard von. A German architect, died April 23, 1917. He was born in Elberfeld in 1848. After studying at Heidelberg University and the Technical Schools of Karlsruhe and Berlin, he attended the Ecole des Beaux-Arts, Paris. He began to practice his profession in Berlin in 1878, and within ten years had gained such a high place that he was made palace architect. At his death he was chief architect to the German emperor. Since 1906 he had been a member of the nobility. Von Ihne designed a number of royal residences in different parts of the country, besides houses for other notable persons, and in Berlin he planned the Kaiser Friedrich Museum and several bridges.

ILLINOIS. Population. The population of the State in 1910 was 5,638,591, and on July 1, 1917, it was estimated to be 6,234,995.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn ...	1917	11,000,000	418,000,000	$459,800,000
	1916	10,200,000	300,000,000	252,756,000
Wheat ..	1917	1,600,000	30,400,000	61,104,000
	1916	1,525,000	16,775,000	27,679,000
Oats	1917	4,700,000	244,400,000	158,860,000
	1916	4,470,000	172,095,000	87,768,000
Potatoes .	1917	150,000	13,500,000	20,520,000
	1916	125,000	7,250,000	12,978,000
Hay	1917	2,750,000	*a* 3,438,000	68,760,000
	1916	3,300,000	4,785,000	54,070,000
Tobacco .	1917	700	*b* 560,000	106,000
	1916	700	525,000	52,000

a Tons. *b*. Pounds.

Mineral Production. The petroleum marketed in 1916 from the oil fields of the State was 17,714,235 barrels, which was about 7 per cent less than the corresponding output of 1915. The average price received for this oil was $1.65 a barrel. The total amount of the value was $29,237,168, an increase of $10,581,318 compared with 1915. As a consequence of its decline in output, Illinois fell to fourth place in the rank of oil producing States, in 1915, and continued to occupy this place in 1916. Third place being taken in 1915 and 1916 by Texas. During the year a total of 1461 wells were completed, compared with 757 in 1915.

There were mined during the year of 1915 silver, lead, and zinc valued at $1,464,067, compared with a value of $1,063,948 in 1916. There were mined 1550 short tons of lead concentrates, and 15,211 short tons of zinc concentrates. The silver produced in 1916 amounted to 5684 fine ounces.

The coal production of the State in 1916 was 66,195,336 tons, an increase of 7,365,760 tons or 12.5 per cent over the production of 1915. That the output was not even greater than this is attributed to a lack of cars, and in some localities to a scarcity of labor. The production was above the normal during the first three months of the year, but fell because of lack of markets until the middle of August, when the demand became stronger. The most notable feature of the year was the extension of the markets for Illinois coal, but this is probably only temporary.

Transportation. The total railway mileage in the State on June 30, 1915, the latest for which statistics are available, was 12,392. The roads having the longest mileage were: Illinois Central, 2024 miles; Cleveland, Cincinnati, Chicago, and St. Louis, 650 miles; The Wabash, 669 miles; The Gan Dalia R. R., 303 miles; Elgin, Joliet, and Eastern, 327 miles.

Finance. The report of the State treasurer for the biennial period of October 1, 1914, to September 30, 1916, shows a balance on hand on October 1, 1914, of $12,255,132. The receipts for the period were $40,485,039, and the disbursements $44,944,340, leaving a balance on hand on September 30, 1916, of $7,795,830. The bonded debt of the State on October 1, 1916, was $17,500.

EDUCATION. The latest figures available for education in the State are for 1914. In that year the total school population was 1,650,258. The total enrollment in the schools was 1,043,227. The total number of teachers employed was 31,805, of whom 26,035 were women, and 5770 were men. The amount paid to teachers was $21,781,221, and the average yearly salary was $684.83. The total expenditure for school purposes during the year was $40,287,756.

CHARITIES AND CORRECTIONS. The State charitable and correctional institutions are as follows: The Elgin State Hospital at Elgin, the Kankakee State Hospital at Kankakee, the Jacksonville State Hospital, the Anna State Hospital at Anna, the Watertown State Hospital at Watertown, the Peoria State Hospital at Peoria, the Chicago State Hospital, the Chester State Hospital at Chester, the Lincoln State School and Colony at Lincoln, the Dixon State School and Colony, the Illinois State School for the Deaf at Jacksonville, the Illinois School for the Blind at Jacksonville, the Illinois Industrial Home for the Blind at Chicago, the Illinois Soldiers' and Sailors' Home at Quincy, the Soldiers' Widows' Home of Illinois at Wilmington, the Illinois Soldiers' Orphans' Home at Normal, the Illinois Charitable Eye and Ear Infirmary at Chicago, the State Training School for Girls at Geneva, the St. Charles School for Boys, and the Alton State Hospital at Alton.

POLITICS AND GOVERNMENT. On June 8, a race riot suddenly broke out in East St. Louis between negroes and white men. The origin of the trouble was the recent immigration of many negroes from the Southern States. They came north to take advantage of the unusual opportunities afforded by war stimulated industries in the manufacturing district. The working men of St. Louis and other cities had strongly opposed the increase of the negro population, and the result was friction which ended in riot.

For three days the city of East St. Louis was in the hands of the mob, and was the scene of repeated riots between whites and blacks. Before the trouble could be quelled, 29 persons, of whom 25 were negroes, had been killed, many more injured, and over 300 houses burned. The riot began with an attempt of a negro attack upon an automobile which contained several policemen. A large number of white men, from the city's slums, then set about to destroy the negro quarters. Buildings were set on fire, and they shot the negroes who attempted to escape. Negroes were attacked on the street cars, and were beaten and killed on the streets.

The grand jury in the latter part of August returned 68 indictments against 105 persons for responsibility in the race riots. Among those arrested were several members of the police. Thirty-two persons were accused of murder, and others of other crimes. The jury in its report declared that the riots were deliberately plotted, and that the police could have prevented them, but for the negligence of public officials. It concluded with a recommendation for a State constabulary of at least 1000 members, to suppress disturbances of this nature.

Indictments were later brought against the mayor of the city, Fred Mollman, and his private secretary, Maurice Ahern. The latter was accused of preventing photographers from securing evidence by taking pictures of the mob. The charges against the mayor were for neglect of duty in failing to enforce the law.

A terrific wind storm swept across the central part of the State on May 26, causing great destruction of property. The town of Mattoon was the chief sufferer. There were over 50 killed, and over 200 injured. The business section of the town was largely destroyed, together with many houses. The total property loss was over $2,000,000. Charlestown also suffered great damages in the loss of life. About 30 people were killed. Many of the smaller towns and villages in the different parts of the State were wrecked. The total number of deaths exceeded 140. The wind and hail ruined the crops over a large area.

On February 13, the State Senate passed a measure providing for a referendum of statewide prohibition at the general election in 1918.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below.

Penalties were provided for the pollution or poisoning of the water supply of the State. The question of whether a constitutional convention should be called was to be submitted to the voters at the next general election. Amendments were made to the laws governing elections. A candidate may not, in return for support, pledge himself, on penalty of fine, imprisonment, or forfeiture of office, if successful, to support or oppose any particular measure. A non-partisan commission to revise the election laws of the State was appointed. Several amendments were made to the laws relating to property. A law was passed requiring the licensing of dogs and authorizes the killing of unlicensed dogs or dogs annoying other domestic animals. A "Blue Sky" law was enacted. The exhibition of books and pictures exciting race or religious prejudices was forbidden. Provision was made for the combination of schools and school districts in such a way as shall best serve the needs of the communities affected. See PROSTITUTION.

STATE OFFICERS. Governor, Frank O. Lowden; Lieutenant Governor, John G. Oglesby; Secretary of State, Louis L. Emmerson; Treasurer, Len. Small; Auditor, Andrew Russell; Adjutant-General, Frank S. Dickson; Attorney-General, Edward J. Brundage; Superintendent of Education, Francis G. Blair; Secretary of Agriculture, B. M. Davison; Superintendent of Insurance, Rufus M. Potts—all Republicans except Potts, Democrat.

JUDICIARY. Supreme Court: Chief Justice, Charles C. Craig; Associate Justices, James H. Cartwright, William M. Farmer, Orrin N. Carter, Frank H. Dunn, George A. Cooke, Warren W. Duncan; Clerk, Chas. W. Vail.

ILLINOIS, UNIVERSITY OF. A co-educational non-sectarian institution of learning at Champaign, Ill. In the fall of 1917 there were 4851 students and 1075 members of the faculty. The library contained 420,737 bound volumes and 105,000 pamphlets. The income is derived from endowment amounting in 1917 to $649,000; from Federal funds, $160,085 in 1917; and from State taxes, amounting in 1917 to $2,575,129; from fees of $255,550; and from miscellaneous revenue of $239,073. Noteworthy benefactions in 1917 were a gift of $90,000 from William B.

McKinley and a legacy from the will of Jesse Barker, the amount of which had not been determined at the end of the year. C. R. Richards, professor of mechanical engineering, was made dean of the College of Engineering; H. W. Ballantine was made dean of the College of Law; Ernest Nernbaum was made professor of English; Elliott Blackwelder was made professor of geology; W. W. Charters, professor of education; and A. T. Olmstead, professor of history. C. H. Johnson, professor of education, died in 1917, and Professor W. F. M. Goss, dean of the College of Engineering, and Professor W. C. Bagley, professor of education, resigned. The University of Illinois was founded in 1867. President, Edmund Janes James, Ph.D., LL.D.

IMMIGRATION AND EMIGRATION. The war in Europe had a profound effect on immigration in 1914. In the decade, 1905-14, immigration averaged 1,012,194 aliens per year. In the fiscal year 1915, which represented practically the first year of the war, the arrivals amounted to only 326,700. In 1916, this had dropped to 298,826, and in the fiscal year 1917 only 295,403 aliens entered the country, or an average, during the period of the war of 306,976 per year. The entry of the United States into the conflict was felt in the last quarter of the year when 42,105 immigrants entered the country as compared with 92,345 for the same quarter of the previous year. During 1917, 67,474 non-immigrant aliens entered the United States. These added to the number of immigrants made a total of admissions amounting to 362,877. Against this 66,277 emigrants and 80,102 non-emigrant aliens, or a total of 146,379 left the country. The actual increase through immigration was, therefore, 216,498 as compared with an increase in 1914 of 769,276.

In 1917, 16,028 or 4.2 per cent of the immigrants arriving were rejected. The new immigration law went into effect during the year, but as it was in operation during only two months of the fiscal year, no definite conclusions can be drawn from the figures for that period. Under the illiteracy test, however, in those two months, 391 aliens were rejected.

The table on the following page shows the net increase or decrease of population by the arrival and departure of aliens for the fiscal year of 1916-17 by countries.

Division of Information. This division has general charge of the employment service for the benefit of immigrants. By an order issued on May 1, 1917, each State was made a separate zone for the work of the division. The total number of persons applying for employment during the year was 413,649; of these, 363,189 were referred to places where their services were needed, and 283,799 were actually employed.

The division was of great service to the national government following the declaration of war, in furnishing information relating to laborers of various sorts available for service.

Immigration. President Wilson, for the second time, vetoed the immigration bill which limits immigration to persons able to read and write. In explanation of his action, the president declared that this test was not a test of character or of personal fitness. He declared that it would serve merely as a penalty for lack of opportunities in the country from which the alien, who is seeking admission, came. A second reason given by him was that the immigration bill contained a provision for admitting refugees from religious persecution even if they could not pass the literacy test. He feared that the presence of such a clause in the bill would make it necessary for immigration officials to pass judgment on the laws and policies of foreign governments, and that it might lead to unnecessary friction between the United States and the government concerned.

The House of Representatives passed the bill over the president's veto by a vote of 285 to 106. The Senate, on February 5, passed the measure over the president's veto by a vote of 62 to 19.

This made the measure effective. The literacy provision excludes from the United States all aliens over 16 years of age and physically able of reading, who cannot read the English language, or some other language or dialect. Any alien, however, who is admitted, can bring in, or send for, a father, or grandfather, over fifty-five years of age, his wife, mother, grandmother, or unmarried or widowed daughter, regardless of whether such relatives can read or not.

IMPERIAL VALLEY. See Dams.

IMPORTS. See Financial Review.

INCINERATORS. See Garbage and Refuse Disposal.

INCOME TAX. See Taxation.

INDIA, British. British India is the territory administered by the British sovereign, as Emperor of India, through the governor-general of India in council. India includes British India and the native states that are under the suzerainty of the British Government. Capital of British India, Delhi.

Area and Population. The table below shows the area of British India by provinces and the total for the native states, together with population as censused March 15, 1901, and March 10, 1911. The figures have been adjusted, as far as possible, to allow for subsequent interprovincial transfers.

	Square	*Population*	
Provinces	*Miles*	*1901*	*1911*
Ajmer-Merwara ..	2,711	476,912	501,395
Andamans and Nicobars	3,143	24,649	26,459
Assam	53,015	5,841,878	6,713,635
Baluchistan	54,228	382,106	414,412
Bengal	78,699	42,141,477	45,483,077
Bihar and Orissa.	83,181	33,242,783	34,490,084
Bombay	123,059	18,559,650	19,672,642
Burma	230,839	10,490,624	12,115,217
Central Provinces and Berar	99,823	11,971,452	13,916,308
Coorg	1,582	180,607	174,976
Madras	142,330	38,229,654	41,405,404
North-West Frontier Province...	13,418	2,041,534	2,196,933
Punjab *	99,779	20,330,337	19,974,956
United Provs. of Agra and Oudh	107,267	47,692,277	47,182,044
British India.	1,093,074	231,605,940	244,267,542
Native states	709,583	62,755,116	70,888,854
India........	1,802,657	294,361,056	315,156,396

* Including Delhi Province, erected in 1912; its area of 557 miles had a 1911 population stated at 391,828.

Below are shown for the larger cities their 1911 population, population per square mile,

IMMIGRATION AND EMIGRATION.

Net increase or decrease of population by arrival and departure of aliens, fiscal years ended June 30, 1916 and 1917, by countries.

Country of last or future permanent residence	1916							1917					
	Admitted			Departed				Admitted			Departed		
	Immigrant aliens	Non-immigrant aliens	Total	Emigrant aliens	Non-emigrant aliens	Total	Increase (+) or decrease (—)	Immigrant aliens	Non-immigrant aliens	Total	Emigrant aliens	Non-emigrant aliens	Total
Austria	3,171	20	3,191	230	26	256	+ 2,935	857	......	857	126	16	142
Hungary	2,020	1	2,021	592	19	611	+ 1,410	401	3	404	112	6	118
Belgium	986	119	1,105	24	47	71	+ 1,034	398	102	500	15	30	45
Bulgaria, Serbia, and Montenegro	764	24	788	250	128	378	+ 410	151	3	154	191	50	241
Denmark	3,322	399	3,721	513	534	1,047	+ 2,674	2,744	456	3,200	489	649	1,138
France, including Corsica	4,156	972	5,128	2,231	1,464	3,695	+ 1,433	3,187	1,215	4,402	2,064	1,086	3,150
German Empire	2,877	228	3,105	439	629	1,068	+ 2,037	1,857	88	1,945	315	305	620
Greece	27,034	502	27,536	4,829	416	5,245	+22,291	23,974	171	24,145	2,034	197	2,231
Italy, including Sicily and Sardinia	33,665	879	34,544	72,507	5,774	78,281	—43,737	34,596	1,140	35,736	12,542	849	13,391
Netherlands	2,910	535	3,445	351	949	1,300	+ 2,145	2,235	1,028	3,263	227	787	1,014
Norway	5,191	1,216	6,407	1,359	895	2,254	+ 4,153	4,659	1,568	6,227	1,633	979	2,612
Portugal, including Cape Verde and Azore Islands	12,259	72	12,331	2,396	249	2,645	+ 9,686	9,975	27	10,002	1,358	140	1,498
Rumania	90	9	99	49	17	66	+ 33	66	13	79	16	1	17
Russian Empire and Finland	7,842	453	8,295	5,259	1,508	6,767	+ 1,528	12,716	524	13,240	5,947	746	6,693
Spain, including Canary and Balearic Islands	5,769	764	6,533	1,816	673	2,489	+ 4,044	10,232	928	11,160	2,491	1,142	3,633
Sweden	6,248	421	6,669	1,412	476	1,888	+ 4,781	6,368	530	6,898	969	463	1,432
Switzerland	663	71	734	201	148	349	+ 385	911	103	1,014	159	98	257
Turkey in Europe	313	7	320	18	7	25	+ 295	152	2	154	24	2	26
United Kingdom:													
England	12,896	4,050	16,946	5,130	16,432	21,562	— 4,616	8,354	3,240	11,594	2,798	7,580	10,378
Ireland	8,639	276	8,915	1,304	771	2,075	+ 6,840	5,406	229	5,635	1,027	353	1,380
Scotland	2,655	515	3,170	1,332	2,240	3,572	— 402	1,868	411	2,279	678	616	1,294
Wales	512	80	592	118	122	240	+ 352	513	77	590	69	45	114
Other Europe	1,717	14	1,731	49	38	87	+ 1,644	1,468	310	1,778	88	9	97
Total Europe	145,699	11,627	157,326	102,409	33,562	135,971	+21,355	133,088	12,168	145,251	35,367	16,149	51,516
China	2,460	687	3,147	2,203	457	2,660	+ 487	2,237	515	2,752	1,871	590	2,461
Japan	8,680	554	9,234	770	850	1,620	+ 7,614	8,991	584	9,575	750	645	1,395
India	112	160	272	123	136	259	+ 13	109	154	263	176	119	295
Turkey in Asia	1,670	28	1,698	14	6	20	+ 1,678	393	11	404	8	2	10
Other Asia	282	155	437	867	28	895	— 458	1,026	400	1,426	356	117	473
Total Asia	13,204	1,579	14,783	3,977	1,477	5,454	+ 9,329	12,756	1,664	14,420	3,161	1,473	4,634
Africa	894	133	1,027	93	138	231	+ 796	566	137	703	108	180	288
Australia, Tasmania, and Pacific Islands (not specified)	1,484	1,708	3,192	445	1,513	1,958	+ 1,234	1,014	1,581	2,595	382	1,352	1,734
New Zealand	90	228	318	10	95	105	+ 213	128	277	405	35	171	206
British North America	101,551	5,717	107,268	15,712	21,981	37,693	+69,575	105,399	3,982	109,381	18,994	16,986	35,980
Central America	1,135	1,674	2,809	495	2,050	2,545	+ 264	2,073	1,343	3,416	530	1,614	2,144
Mexico	18,425	1,418	19,843	532	2,196	2,728	+17,115	17,869	2,266	20,135	812	1,951	2,763
South America	4,286	1,769	6,055	997	2,509	3,506	+ 2,549	6,931	1,984	8,915	993	2,659	3,652
West Indies	12,027	9,126	21,153	5,059	13,634	18,693	+ 2,460	15,507	10,790	26,297	5,891	16,335	22,226
United States	......	32,915	32,915	....	31,848	31,848	+ 1,067	....	31,127	31,127	......	21,260	21,260
Other countries	31	28	59	36	39	75	— 16	77	155	232	4	22	26
Grand total	298,826	67,922	366,748	129,765	111,042	240,807	+125,941	295,403	67,474	362,877	66,277	80,102	146,379

and the number of their Hindu and Mohammedan inhabitants:

Cities	*Population* *No.*	*Per Sq. M.*	*Hindu*	*Mohammedan*
Calcutta, with suburbs	1,043,307	24,841	693,492	298,986
Bombay	979,445	42,585	664,042	179,346
Madras	518,660	19,210	415,910	59,169
Hyderabad	500,623	10,012	262,131	219,896
Rangoon	293,316	10,476	108,350	54,634
Lucknow	259,798	11,484	145,095	103,578
Delhi	232,837	15,248	121,735	102,476
Lahore	228,687	7,816	77,267	129,801
Ahmedabad	216,777	21,678	152,114	45,282
Benares	203,804	20,394	144,598	56,736
Agra	185,449	11,002	116,761	59,151
Howrah	179,006	20,985	132,409	44,007
Cawnpore	178,557	18,260	125,180	46,940
Allahabad	171,697	11,246	112,968	50,085
Poona	158,856	12,220	125,128	20,052
Amritsar	152,756	15,276	58,720	71,851
Karachi	151,903	2,139	66,201	74,075

Other details of population, and also statistics of religion, may be found in the YEAR BOOKS for 1915 and 1916.

EDUCATION. The 1911 census recorded literacy in the case of 313,415,389 persons (160,418,470 male, 152,996,919 female); of these, literate persons numbered 18,539,578 (16,938,815 male, 1,600.763 female); persons literate in English, 1,670,387 (1,518,361 male, 152,026 female).

For the year 1914-15 the number of educational institutions reported for British India (exclusive of Baluchistan) was 185,301, with 7,462,031 scholars. These figures are slightly smaller than those reported for 1913-14 (185,584 institutions, 7,531,515 scholars), but for that and previous years figures for certain native states are included. Educational institutions in 1914-15 are classified in the following table:

	Institutions for *Males*	*Females*	*Scholars* *Males*	*Females*
University:				
Arts colleges	137	11	41,550	406
Professional colleges	45	3	8,613	119
General:				
Secondary	6,403	606	1,015.670	87,194
Primary	116,077	15,709	4,521,015	930,187
Special	6,589	1,218	185,375	37,035
Total public	129,251	17,547	5.770,228	1,054,941
Private:				
Advanced	2,571	18	53,387	1,904
Elementary	33,895	2,019	510,058	71,518
T'l private	36,466	2,037	563,445	78,422
Grand total	165,717	19,584	6,338,668	1,128,868

AGRICULTURE. In British India in the year 1914-15, the reported net area sown with crops was 227,611,132 acres, as compared with 219,191,773 acres in 1913-14 and 207,683,741 acres in 1905-6. Irrigated area in 1914-15, 47,193,925 acres; in 1913-14, 46,836,019 acres. The reported area under food grains in 1913-14 was 191.573,393 acres; in 1914-15, 204,504,550 acres, of which 77,668,882 acres were under rice, 25,451,330 wheat, 21,223,398 jawar, 16,041,561 bajra, 14,364,490 gram, 7,904,783 barley, 6,187,729 maize, 4,250.788 ragi, and 31,411,589 other grains and pulse. The area under oilseeds in 1914-15 was 15,333,591 acres, including sesamum (til), 4,478,128, rape and mustard, 4,144,374, and linseed, 2,525,432; cotton, 15,221,787; jute, 3,308,718; other fibres, 976,142; sugar cane, 2,458,865; tea, 584,379; coffee, 86,712; tobacco, 1,056,349; opium, 178,582 (654,078 in 1905-6); indigo, 145,792; fodder crops, 6,362,511.

Some of the more important yields (including crops in certain of the native states) have been reported as follows:

Crops	*1914-15*	*1915-16*	*1916-17*
Rice .....tons	27,242,000	32,831,000	34,079,000
Wheat .... "	10,087,000	8,652,000	10,158.000
Raw sugar. "	2,462,000	2,634,000	2,626.000
Tea ...pounds	312,976,200	371,836,700	368,527,600
Cotton ..*bales	5,209,000	3,738,000	4,273,000
Jute .... "	10,443.900	7,340,900	8,305,600
Linseed ...tons	397,000	476,000	520,000
Rape and mustard. "	1,219,200	1,102,100	1,181,200
Sesamum.. "	551,000	482,000	493,000
Groundnut. "	947,000	1,058,000	1,147,000
Indigo ....cwt.	25,200	55,100	95,500

* Of 400 pounds.

COMMERCE. During the fiscal year ending March 31, 1914, both imports and exports of merchandise were of unprecedented magnitude. The sharp decline in the following year, which continued in respect of imports in 1915-16, was in consequence of disorganized markets and steamship service due to the great war. Trade recovery is noted in the figures for 1916-17, imports of private merchandise being valued at £99,748,000 and exports of private Indian merchandise at £155,435,000; but the increase in the recorded values was due largely to advanced prices; in all the main classes of merchandise, there was an increase on account of a higher level of prices, while there was a decrease in the volume of trade. Import values for 1916-17 recalculated at the prices prevailing in 1915-16 show a decrease (on account of the decrease in volume) of about £9,661,000 from the total import value of 1916-17. In import values all principal articles showed considerable increases over 1915-16, with the exception of railway plant and rolling stock, sugar, iron and steel, and matches; cotton goods (notwithstanding a decline in gray piece goods) increased by £6,278,000. In the export trade, raw cotton increased by £6,267,000; seeds by £4,214,000, raw hides and skins by £3,077,000; leather and cowhides by £2,535,000; and jute goods by £2,451,000; while tea declined by £2,124,000. In 1915-16, manufactures constituted over 71 per cent of the total value of imports; in 1916-17, over 73 per cent. About two-thirds of the export value consists of food, tobacco, and raw materials.

For years ending March 31, the following table shows sea-borne imports and exports, in thousands of pounds sterling:

Imports	*1913-14*	*1914-15*	*1915-16*	*1916-17*
Private mdse.	122,165	91,953	87,560	99,748
Govt. stores	5,378	4,668	4,122	7,072
Total mdse.	127,539	96,620	91.682	106,820
Private treasure	24.414	14,514	7,903	9,933
Govt. treasure	4.546	25	61	15,700
Total treasure	28,960	14,539	7,964	25,633
Total imports	156,498	111,159	99,646	131,982

Exports	*1913-14*	*1914-15*	*1915-16*	*1916-17*
Private mdse.:				
Indian produce..	162,801	118,323	128,356	155,435
Foreign produce..	3,118	2,738	3,231	5,156
Total	165,919	121,061	131,587	160,591
Govt. stores.......	86	390	1,400	1,440
Total mdse. ...	166,005	121,451	132,987	162,031
Private treasure...	4,701	2,202	4,951	3,293
Govt. treasure.....	21	1,324	533	987
Total treasure..	4,722	3,526	5,484	4,280
Total exports...	170,727	124,977	138,471	166,311
Net exps. mdse....	38,466	24,830	41,305	55,211
Net imps. treas....	24,238	11,018	2,480	21,358
Excess exports..	14,229	13,818	38,825	33,858

Principal imports of private merchandise in 1916-17, in thousands of pounds sterling: Cotton goods, 32,677; cotton yarn, 2699; sugar, 10,300; iron and steel, 5919; machinery, etc., 3632; mineral oils, 2950; hardware, etc., 2072; silk goods, 1894; provisions, 1873; paper, etc., 1554; liquors, 1553; motor cars and cycles, 1430; woolen goods, 1314; spices, 1298; salt, 1277; chemicals, 1251; instruments, etc., 1167; apparel, 1053; railway material, 1046; glass, 1001; drugs and medicines, 929; haberdashery, etc., 890; fruits and vegetables, 779; matches, 771.

Principal exports of Indian produce in 1916-17, in thousands of pounds sterling: Jute manufactures, 27,770; raw cotton, 22,790; rice, 12,498; tea, 11,181; seeds, 10,962; raw jute, 10,859; raw hides and skins, 9606; cotton yarn, and manufactures, 8506; wheat and flour, 6812; leather and cowhides, 6294; barley, pulse, millets, etc., 3959; raw wool, 2520; dyes, etc., 1987; lac, 1867; opium, 1398; rubber, 1056; hemp, 1015; oils, 1007; manganese ore, 830; chemicals, 746; spices, 723; coffee, 697; paraffin wax, 678; oilcake, 661.

Percentages of imports and exports of merchandise (private sea-borne trade) by countries in 1916-17: United Kingdom, 58.7 per cent of the imports and 33.3 per cent of the exports; Japan, 8.9 and 11.0; Java, 3.9 and 1.2; United States, 7.3 and 12.9; Straits Settlements, 2.6 and 2.6; Italy, 1.7 and 4.0; France, 1.4 and 5.9; China, I.1 and 2.4; Ceylon, 0.8 and 4.4.

The table below shows the private trade by principal countries, for the years 1914-15 and 1915-16, imports of merchandise and exports of Indian merchandise, in thousands of pounds sterling:

	Imports		*Exports*	
	1914-15	*1915-16*	*1914-15*	*1915-16*
United Kingdom.....	61,959	52,053	37,258	48,788
Java	5,480	8,959	1,226	1,203
United States........	3,120	5.247	11,562	14,098
Japan	2,966	4.998	10.436	12.271
Straits Settlements...	2,250	2,502	3.365	3,837
Mauritius	1,558	1,419	1,011	770
Italy	1,015	1,337	4,570	5,952
France	1,175	1,329	5,887	6,270
China	1,045	1.283	2.688	3,578
Hongkong	632	884	2,809	2,746
Ceylon	528	637	5,033	6,120
Australia	567	447	2,625	2,968
Germany	3,100	307	6.785	....
Belgium	1,086	154	3,506	154
Russia	24	57	1,240	3,623
T'l, includ'g others.	91,952	87,560	118,323	128,356

The foregoing commercial paragraphs relate only to the sea-borne trade. There is a land trade of some magnitude, but as registration is difficult, the statistics are of doubtful accuracy. The most important countries in the land trade are Nepal, the Shan States, and Afghanistan. Reported figures for the land trade, in thousands of pounds sterling:

	Imports		*Exports*	
	1913-14	*1914-15*	*1913-14*	*1914-15*
Merchandise	7,239	6,714	5,592	5,679
Treasure	778	914	689	651
Total	8,018	7,629	6,282	6,330

Total land imports and exports in 1916-17 were valued at £8,579,000 and £7,090,000 respectively.

SHIPPING. In 1915-16, the number of vessels, in the foreign trade, entered and cleared at the ports was 8634, with a tonnage of 12,152,000; in 1916-17, 10,386 vessels, with a tonnage of 11,955,000. These figures include vessels with cargo and in ballast. Of the 1916-17 tonnage, about 79 per cent was under the British flag. The chief ports are Calcutta and Bombay, which together have about 70 per cent of the foreign trade; next come Karachi, Rangoon, and Madras.

COMMUNICATIONS. The total length of railway open to traffic in British India and the native states March 31, 1916, was 35,833 miles, as compared with 35,285 miles in 1915. In 1916, state lines operated by the state had 7288 miles of track; state lines operated by companies, 18,974 miles; companies' lines subsidized by the government of India, 2194 miles; native state lines operated by native states, 2311 miles.

On March 31, 1916, the total capital outlay was £391,585,000. For the year 1915-16, net earnings were £27,826,000; net earnings of state lines operated by the state, £4,076,000; total capital expenditure on railways, about £8,436,000.

The Railway Board of India in 1917 sanctioned a survey by the Eastern Bengal Railway for a 5 foot 6 inch gage line from Birngar on the Lalgola branch of the railway to Krishnagar via Santipur, with an extension to the Bhagirathi River opposite Nabadwip.

Telegraphs March 31, 1916: 10,482 offices, with 36,067 miles of line and 337,720 miles of wire. Post offices, 19,328.

FINANCE. The standard of value is gold. The monetary unit is the rupee. The rupee is the current coin and the common money of account, but the British sovereign is also a legal tender. In England Indian accounts are often officially published in pounds sterling. The pound sterling has a par value of $4.86656 (exchange value of October 1, 1917, $4.755); the rupee is worth one-fifteenth of the pound sterling, or 32.444 cents. The budget for the fiscal year ending March 31, 1918, showed for British India estimated gross revenue and expenditure of £98,850,900 and £98,819,300 respectively.

The table below shows the principal sources of revenue for fiscal years, in thousands of pounds sterling (revised estimate for 1916-17):

Revenue	*1913-14*	*1914-15*	*1915-16*	*1916-17*
Principal heads of revenue:				
Land revenue....	21,392	21,222	22,031	22,038
Opium	1,645	1,572	1,914	3,158
Salt	3,445	3,911	3,647	4,786
Stamps	5,318	5,082	5,484	5,801
Excise	8,894	8,857	8,632	9,149
Provincial rates.	180	39	42	31
Customs	7,558	6,347	5,874	8,626
Income tax......	1,950	2,037	2,090	3,601
Forest	2,230	1,981	2,074	2,315
Registration	519	485	519	542
Tributes from native states.	617	610	609	664
Total	53,729	52,142	52,866	60,631
Interest	1,352	1,023	1,097	1,110
Posts & telegraphs.	3,599	3,597	3,788	4,177
Mint	340	69	102	625
Civil Departments..	1,408	1,505	1,580	1,694
Miscellaneous	773	678	679	807
Railways (net)....	17,626	15,799	17,977	20,982
Irrigation	4,713	4,681	4,779	4,966
Other civil pub. works	299	288	304	313
Military receipts...	1,370	1,375	1,240	1,470
Total	85,207	81,157	84,414	96,775

The following table shows for fiscal years the general statement of gross expenditure charged against revenue, in thousands of pounds sterling (revised estimate for 1916-17). The first item, direct demands on the revenue, includes refunds and drawbacks, assignments and compensations, charges in respect of collections, etc.

Expenditure	*1913-14*	*1914-15*	*1915-16*	*1916-17*
Direct demands....	9,275	8,939	9,467	9,492
Interest	1,516	1,191	1,190	770
Posts & telegraphs	3,273	3,257	3,150	3,556
Mint	133	142	89	178
Civil departments..	17,934	18,910	18,868	19,630
Misc. civil charges	5,404	5,311	5,129	5,386
Famine relief and insurance	1,000	1,000	1,000	1,000
Railway account *.	12,836	13,641	13,902	14,185
Irrigation	3,532	3,754	3,721	3,679
Other public works	7,010	7,177	5,452	4,683
Military services...	21,266	21,810	23,503	26,625
Total	83,178	85,138	85,471	89,179
Net excess (+) on provincial allotments	—283	—2,190	+131	+1,609
Total charged against rev.	82,895	82,948	85,602	90,786

* Working expenses are treated as deduction from revenue instead of expenditure.

On March 31, 1917, the debt of British India amounted to about £285,310,000 (about £174,145,000 in England and about £111,165,000 in India), as compared with £319,877,100 in 1916.

Government. The King of Great Britain and Ireland is Emperor of India. In England, Indian affairs are administered by the secretary of state for India (a member of the British cabinet). In India, the executive authority resides in "the government of India," that is, the governor-general in council. The governor-general is appointed by the crown for five years. The council consists of six members (in addition to the governor-general), who are appointed by the crown, and of the commander-in-chief of the army in India. There is a legislative council which includes thirty-six official members (among whom are the members of the executive council and other members nominated by the governor-general) and thirty-two non-official, of whom twenty-seven are elected. This council may legislate for all persons within British India and for all British subjects within the native states. There are provincial legislative councils in Bengal, Bombay, Madras, Bihar and Orissa, the United Provinces, the Punjab, the Central Provinces and Berar, Assam, and Burma. The governor-general in 1917 was Baron Chelmsford, who succeeded Baron Hardinge of Penshurst in March, 1916.

The native states are governed by their princes, ministers, or councils, but the government of India, through British residents or agents, exercises control in varying degrees, and does not permit the states to make war or peace or to maintain external relations.

History. On March 1 it was announced that the Indian government had voluntarily offered the contribution of £100,000,000. There was a heavy strain on the resources of the government on account of the war and the finance member of the Viceroy's Council, Sir William Meyer, urged that the duty on imported cotton goods be increased, while leaving the excise duty to be abolished when the circumstances permitted. At first this course was not taken on account of the objection of the British Government, but on March 1 it was announced that the Imperial Government had consented to the increase of the import duty on cotton goods from 3½ per cent to 7½ per cent. The cotton excise duty was to remain at 3½ per cent. The raising of the duty on cotton goods aroused much opposition in Manchester (see Great Britain). In June two new Indian members were appointed to the Council of India. The appointment of native members had been introduced under the Morley administration. Measures for extending the principle of self-government in India were under discussion toward the close of August. The principles laid down by the Government were: Increasing the association of Indians in every branch of the administration; the gradual development of organs of self-government in order to introduce responsible government in India as an integral part of the British Empire; the pursuance of this policy deliberately and in successive stages; the necessity that the home Government and the government of India should be the judges of the proper time for introducing these progressive measures and that they must be guided by the coöperation of the native Indians and by the extent to which confidence could safely be placed in their sense of responsibility. It was announced that the secretary of state for India, Mr. Montagu, would visit India in order to arrange for the carrying out of the programme. There were signs of a tendency in India to make extreme demands such as a form of complete home rule to be introduced as soon as the war ended. The proposals met with some criticism on the part of the European communities. At a meeting at Bombay on October 13 under the auspices of the European Association a resolution was passed declaring that while the European community sympathized with the just claims of the native Indians it believed that the only issue at present should be the successful prosecution of the war and pointed out the danger of listening to the extremists among the natives.

On September 5 Lord Chelmsford reviewed the part that India had taken in the war. From the first troops had been sent to France and to Egypt, they had been excellently equipped and had conducted themselves well. At present the British general in Mesopotamia, Sir Stanley Maude, controlled a large fleet of river vessels on the Rivers Tigris and Euphrates and of these 57 per cent had been supplied by India. Besides that, numbers of steamers, launches, and barges had been built or reconstructed at Indian ports and were being taken to the head of the Persian Gulf. The railway construction in Mesopotamia had gone on rapidly and the British forces now had at their disposal a considerable mileage. Toward this work India had contributed effectively, supplying the rails, sleepers, bridge material, and men required for the working of the lines. India had sent large quantities of railway material also to Egypt and East Africa and the Indian telegraph department had supplied and maintained more than 9000 miles of line. The farmers' department, by the cultivation of vegetable gardens in the Tigris and Euphrates valleys, had brought the provisioning of the armies up to a point of great efficiency. India had established a man-power board and the recruiting had enormously increased. She had recruited also some twenty labor corps in Mesopotamia and twenty-five in France, and besides that had recruited and dispatched overseas about 60,000 artisans, laborers, etc., and 30,000 menials and followers. There were 3000 officers in the Indian army officers' reserve, as compared with forty at the beginning of the war. In the spring of 1917 an Indian munitions board was founded under the direction of Sir Thomas Holland and set a good many new enterprises in motion. The Indian war loan, which was expected to raise £10,000,000 had raised more than £32,000,000. Besides that, India was financing to a large extent the exportation of wheat, hides, jute manufactures, and other important commodities.

INDIANA. POPULATION. The population of the State in 1910 was 2,700,876, and on July 1, 1917, it was estimated to be 2,835,492.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	5,651,000	203,486,000	$254,295,000
	1916	5,137,000	174,658,000	146,713,000
Wheat ...	1917	1,805,000	38,392,000	67,786,000
	1916	1,620,000	19,440,000	32,854,000
Oats	1917	1,820,000	76,440,000	48,157,000
	1916	1,750,000	52,500,000	26,775,000
Potatoes .	1917	92,000	8,464,000	11,765,000
	1916	74,000	3,256,000	5,763,000
Hay	1917	2,146,000	*a* 3,004,000	56,175,000
	1916	2,300,000	3,312,000	36,101,000
Tobacco .	1917	14,800	*b* 14,060	3,374,000
	1916	14,800	13,764	1,789,000

a Tons. *b*. Pounds

MINERAL PRODUCTION. The coal production of the State in 1916 was 20,093,528 tons compared with 17,600,152 in 1915. The greater part of this increase was in Vermilion, Vigo, and Knox counties. There were local strikes in the year, which affected labor for a period, in some of the large mines. The mines also suffered from car shortage. Shipments were made during the year to points as far east as central New York, and the quantities shipped to Ohio and Michigan were limited only by ability of operators to get cars on which to load this coal.

The petroleum marketed in the State in 1916 amounted to 769,036 barrels, a decrease of 12 per cent from the 875,758 barrels marketed in 1915. The oil field of the State is a part of the Lima Indiana field which marketed 3,905,003 barrels in 1916 and 4,269,591 barrels in 1915. By far the larger production is obtained from that portion of the field situated in Ohio. The number of men employed in the coal mines of the State increased from 22,777 in 1915, to 23,965 in 1916.

TRANSPORTATION. The total railway mileage in the State on December 31, 1916, was 7766. There were constructed during the year of 1917 about 30 miles by the Indianapolis and Frankfort Co.

The railroads having the longest mileage are: Cleveland, Cincinnati, Chicago, and St. Louis, 959; Pittsburgh, Cincinnati, Chicago, and St. Louis, 751; Chicago, Indianapolis, and Louisville, 595; Lake Erie and Western, 471; Chicago and Eastern Illinois, 467.

FINANCE. The report of the State treasurer for the year 1914, the latest for which statistics are available shows the total receipts from all sources, including balance of $378,271, was $12,922,278. The expenditures for the year left a balance on hand on September 30, 1914, of $649,964.

EDUCATION. The total number of school children in the State in 1916 was 774,342. The enrollment in the public schools was 564,920, with an average daily attendance of 463,920. The number of teachers employed was 19,648. The average yearly salary of teachers was $587.51. The total amount expended for school purposes in the public schools was $11,553,513.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the Indiana Reformatory at Jeffersonville, the Indiana State School for the Deaf at Indianapolis, the Central Hospital for the Insane at Indianapolis, the Indiana State School for the Blind at Indianapolis, the Indiana State Prison at Michigan City, the Soldiers' and Sailors' Orphans Home at Knightsville, the Indiana Boys' School at Plainfield, the Indiana Women's Prison at Indianapolis, the School for the Feeble-minded at Fort Wayne, the Northern Hospital for the Insane at Logansport, Eastern Hospital for the Insane at Richmond, the Southern Hospital for the Insane at Evansville, State Soldiers' Home at Lafayette, Indiana Girls' Home at Clermont, South Western Hospital for the Insane at North Madison, Indiana Village for Epileptics at New Castle, and the Hospital for the Treatment of Tuberculosis at Rockville; also a State farm at Putnamville. These institutions are maintained by appropriations from the State general fund made biennially by the legislature.

POLITICS AND GOVERNMENT. The year opened politically with the assemblying of the biennial session of the State legislature and the inauguration of Governor James P. Goodrich and the other newly elected Republican State officials. The principal work of the legislature was the passage of an act providing for a constitutional convention, granting women the right to vote and a State-wide bone dry prohibition law. Both the constitutional convention act and the woman suffrage measure have been held unconstitutional by the State Supreme Court and an attack was made on the prohibition act which was undecided at the close of the year. The spring primaries for the nomination of city and county officials throughout the State passed off without the usual confusion and charges of fraud so rampant since the system was introduced. The fall elections showed Republican gains very generally throughout the State, a number of the old Democratic officials being replaced by their Republican opponents. This was particularly true of Indianapolis where the city ticket headed by Charles W. Jewett for mayor was successful over a home rule ticket and the regular Democratic nominees. John Worth Kern (q.v.), the well known Democratic politician, died in August. He had served his State in the U. S. Senate for a number of years, being defeated at the last election. He was vice-presidential nominee on the Wm. J. Bryan ticket in the campaign in 1908. During the year the Federal Grand Jury, sitting at Indianapolis, returned indictments against Mayor Joseph E. Bell, Chief of Police Samuel V. Perrott, and a number of minor officials of the city of Indianapolis and other towns in the State, charging them with election frauds during the campaign of 1914. Mr. Perrott was convicted and sentenced to four years in the Atlanta penitentiary, where he is now serving his sentence. There were also a number of convictions of the minor Indianapolis officials. The trial of Mr. Bell was pending at the close of the year.

At the special election held on June 26, Richard N. Elliott, Republican, was elected to Congress from the 6th district, defeating Finley H. Gray, Democrat.

On March 11, the State was visited by a terrific storm which resulted in several deaths and the destruction of property valued at one million dollars. The greatest damage was done in the city of New Castle, where 20 people were killed, and over 150 injured. Three hundred dwelling houses were wrecked, and communication with the outside world was cut off for several hours. In Wayne County, two children were killed, and several houses destroyed.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below.

The laws relating to civil and judicial procedure were amended in important detail.

Any provision of a will to the effect that any beneficiary who takes proceedings to contest the will or prevent its admission to probate shall forfeit any benefit provided therein is declared void.

The legislature passed a measure providing for the election of delegates to a constitutional convention without referring it to the people. This was afterward declared unconstitutional by the courts.

The right of women to vote was extended to all offices not specified in the State constitution. Provision was made for the voting of citizens absent from the State in the national service. Those absent for illness, business, or unavoidable causes were included in this provision.

A general prohibition law, effective April 2, 1918, was enacted.

Provision was made for the selling by weight, by numerical count, of a long list of enumerated commodities.

STATE OFFICERS. Governor, James P. Goodrich; Lieutenant Governor, Edgar Bush; Secretary of State, Ed. Jackson; Treasurer, Uz McMurtrie; Auditor and Commissioner of Insurance, Otto Klaus; Attorney-General, Eli Stansbury; Adjutant General, Harry B. Smith; Superintendent of Education, Horace Ellis—all Republicans.

JUDICIARY. Supreme Court: Chief Justice, John W. Spencer; Associate Justices, Moses B. Lairy, D. A. Myers, Richard K. Erwin, Lawson Harvey; Clerk, F. Fred France.

INDIANA UNIVERSITY. A co-educational State institution of learning at Bloomington, Ind. In the fall of 1917 there were 1652 students and 197 members of the faculty. Volumes in the library numbered 115,000. Productive funds amounted to $864,000 and the income therefrom to $43,946. In 1917 Professor A. L. Foley was appointed research professor in the Watermann Institution, founded by Dr. Luther D. Watermann and conducted by Indiana University. President, William Lowe Bryan, Ph.D., LL.D. Indiana University was founded in 1820.

INDIANS. During the year the policy was adopted by the Indian Department of treating as competent to manage their own affairs, the Indians of one-half or less Indian blood. This policy will place a very large number of Indians upon the same plane of business equality with the white people surrounding them. It will also bring the reduction of expenditures, and permit close attention each year to the diminishing number which will need further protection. A successful registration of all Indians was made under the Conscription Act, and aroused patriotic interest. This is indicated by the subscription of over $4,500,000 in Liberty Bonds by the Indians, and the voluntary enlistment of all students and former students in some branch of the service. Under the new vocational course of study, uniform examinations in the schools were established. The enrollment of Indians in the public schools under tuition contracts was increased to about three times the number in 1916. In 2285 school districts of the Five Civilized Tribes, there were 18,185 pupils enrolled during the year. The health campaign was carried on with special effect against tuberculosis, trachoma, and infant diseases. This resulted in a remarkable improvement in the sanitation of Indian homes, and an increase of cases treated in sanatoria. Unusually good results were also obtained in suppressing intemperance. This was aided by prohibitory laws in sixteen States where Indians resided, or were contiguous thereto, and by Federal legislation controlling interstate commerce in the liquor traffic.

Important irrigation projects on lands owned by Indians were undertaken in the arid Southwest. The remarkable growth in the industrial development was shown by the fact that in 1911 they cultivated 38,025 acres, and in 1917, 678,529. In the former year they raised crops to the value of $1,951,000, and sold products of industry valued at $9,000,000; in 1917 crops were valued at $5,293,719, and products of industry at $4,583,083. The value of all live stock owned by the Indians increased from $17,971,209 in 1911 to $28,824,439 in 1917.

See ANTHROPOLOGY.

INDIAN TRAINING AND INDUSTRIAL SCHOOL. A non-sectarian co-educational institution for the education of the American Indian, at Carlisle, Pa. In the fall of 1917 there were

773 students and 61 members of the faculty. Volumes in the library numbered 4200. The school was founded in 1879. In 1917 Superintendent Oscar H. Lipps was transferred to the chief supervisorship of the Indian Service and he was succeeded by John Francis, Jr., formerly chief of education in the Indian office.

INDO-CHINA. The southeastern peninsula of Asia, called also FARTHER INDIA. The peninsula includes: Burma, which is politically a part of British India; Siam, an independent kingdom; French Indo-China (including Cochin-China, Cambodia, Annam, Laos, and Tongking, but excluding Kwangchow-Wan); the Federated Malay States; other Malay states (Johore, Kedah, Perlis, Kelantan, and Trengganu); and the Straits Settlements proper. All this territory is "Farther India," but properly, for ethnological reasons, "Indo-China" does not include the Malay States and the Straits Settlements. See FRENCH INDO-CHINA, and the other principal states mentioned above.

INDUSTRIAL WORKERS OF THE WORLD. This organization grew out of a strike in Colorado which culminated in 1905 in the union of various western labor organizations to form the I. W. W. It later split into two branches with headquarters at Chicago and Detroit. The former branch is more extreme, in that it advocates direct action, including sabotage and the general strike. Both branches favor industrial unionism in preference to trade unionism, opposition to political methods, industrial revolutions, and the immediate confiscation of productive capital. Recently the Detroit branch which has been less conspicuous in its activities adopted a new name, The Workers International Industrial Union.

The Chicago branch was very conspicuous in the first seven months of 1917, and less so thereafter. During the past three years it has grown rapidly, claiming in August over 90,000 paying members. In the year ending July 31 the headquarters handled over $100,000. It has secured extensive hold upon the large body of more or less itinerant labor throughout the Western, Mountain, and Pacific States. This labor includes such groups as the thousands of harvest hands who follow the crops north from Oklahoma and Kansas to Minnesota and the Dakotas; the lumbermen of the North and Northwest; the iron miners of Michigan, Wisconsin, and Minnesota; the copper, lead, gold, and silver miners of Michigan, Colorado, Arizona, Montana, Utah, and California; and the coal miners of Colorado. Owing to the radical nature of their doctrines and the fact that in recent years they have been leaders in numerous spectacular strikes in which there has been more or less violence, the organization has come into very wide disrepute on both Atlantic and Pacific coasts. During 1917 at various times press dispatches, never proven true, reported that the organization was in the pay of German agents. While the organization was far from loyal and in many cases openly preached sedition and was undoubtedly guilty of treasonable action in interrupting work on farms and in mines and lumber camps, nevertheless its president, William D. Heywood, openly denounced German militarism. He announced opposition to all existing governments but sympathy with the workers of all nations. An indication of the general feeling regarding the organization was indicated by the introduction in Congress in August of several bills designed to check its activities. These provided variously for penalizing interference with government contracts or with work on materials intended for government use, or any utterance of disloyal or seditious language. About the same time the Chamber of Commerce of Phoenix, Ariz., resolved in favor of a census of labor, an industrial drafting service, and prohibition of every form of advocation of crime, sabotage, or violences in efforts to secure industrial reforms. The most spectacular events relating to the organization in 1917 occurred at Everett, Wash.; Bisbee, Ariz.; and Butte, Mont.

EVERETT, WASH. On November 5, 1916, a boatload of about 200 I. W. W.'s from Seattle had engaged in a battle with the sheriff and 150 deputies at Everett, Wash. The trouble had begun in a strike of shingle-weavers but developed into an issue of freedom of speech and assemblage. Two deputies and five I. W. W.'s were killed. Seventy-four of the labor men were arrested. After nine weeks' proceedings their trial resulted in a verdict of not guilty on May 5. The evidence seemed to indicate that the first shots were fired from the land; that after them the men on the boat rushed back away from shore, the boat being already at the wharf, nearly overturning their boat and crowding some of their number in the water; thereafter shots were fired in a fusillade from both boat and land, the latter shots coming from different directions and being directed in part at men in the water.

BISBEE, ARIZ. Late in June the managers of the Copper Queen Consolidated Mining Company (Phelps-Dodge Corporation), and the Calumet and Arizona Mining Company of Cochaise County, Ariz., claimed that members of the I. W. W. had fomented a strike recently begun at their mines. The sheriff of the county sought to secure the assistance of Federal troops; regular army officers made investigations on June 30 and July 2 reporting everything peaceful and troops not warranted. On July 12 the sheriff with a posse of about 2000 deputies rounded up 1186 men of the district and deported them by train to a small way-station near Columbus, N. M. After two days without food, water, or shelter the Federal government intervened and thereafter maintained the men in continually dwindling numbers until the middle of September. Of these men, 433 were married, 199 were native-born Americans, 468 were citizens and 472 were registered under the draft law. Over twenty foreign nationalities were represented. While some opinion approved the deportation because of intense hatred of the I. W. W. the majority opinion considered the action as an application of mob rule. President Wilson appointed a commission headed by the secretary of labor and including representatives of employers and labor with Professor Felix Frankfurter of the Harvard Law School as counsel to investigate. Its report in December denounced the deportation as "wholly illegal and without authority in law, either State or Federal." It found the root of the trouble in the fact that there was "no machinery for the adjustment of difficulties between the companies and the men."

THE LITTLE CASE. Early in the morning of August 1 a number of disguised men seized Mr. Frank Little, a member of the Executive Committee of the I. W. W., while still in bed at Butte, Mont., and hanged him. This act was a direct consequence of an extensive strike which had been carried on in that city, but the issues involved in the matter were confused because of the disloyal utterances of Little and his associates. Consequently opinion regarding the affair differed sharply. While here and there were those who denounced the action as contrary to the fundamentals of law and order, the majority opinion either approved mildly or vigorously. Even in Congress a representative declared that those who disavow their government "have no right to 'squeal' when citizens of this country hang one of them occasionally."

HEADQUARTERS RAIDED. On September 5 the United States Department of Justice made simultaneous raids upon the headquarters of the organization and seven other strongholds in Chicago and twenty other cities throughout the country. Wagon loads of papers were seized. Included in these raids were not only I. W. W. headquarters and homes of leaders but also the homes and headquarters of radical socialist agitators. The avowed purpose was to check an alleged country-wide conspiracy to hamper the government in every possible way in its prosecution of the war. While this action was denounced by a few liberals as tyrannical and an undue suppression of freedom of speech and press, the general opinion throughout the country distinctly approved it. Following the raid, William S. Heywood, general secretary, and 167 associates in the organization were arrested on the charge of seditious conspiracy. So far as made public the evidence showed no connection between the officials of the I. W. W. and German agents, but many utterances advocated the use of sabotage and tactics of interference with industrial and transport activities necessary to the prosecution of the war, or in their phrase "the machinery of murder."

INJUNCTION. For many years organized labor in this country, especially the American Federation of Labor (q.v.), has been unrelenting in its opposition to the customary uses of injunctions in labor disputes. Court decisions as to the proper scope of restraining orders have differed widely, depending apparently more on the personal views of judges than on exact definitions of law and precedent. The federation has sought the enactment of laws by legislatures, limiting the powers of courts in issuance of injunctions; it has repeatedly declared that an injunction based on the dictum that "labor is property" is tyrannical usurpation of power and should be wholly disregarded; and it has found great satisfaction in those clauses of the Clayton Act which declare that labor is not a commodity and otherwise limit the use of injunctions in trade disputes. For *Danbury Hatters Case* see TRADE UNIONS.

LUMBER COMPANIES V. CARPENTERS. Sometime in 1911 the Paine Lumber Company, of Oshkosh, Wis., and other lumber and construction companies of that State, Pennsylvania, Virginia, and New York, sought an injunction in the District Court of the United States at New York City against the United Brotherhood of Carpenters and Joiners of America, other unions, their officials, and publications to prevent interference in any way with the business of the complaining concerns. This suit was brought under the Sherman Anti-Trust Act of 1890 and was supported by the American Anti-Boycott Association. It was alleged that the defendants by mutual agreement were carrying out a boycott which resulted in restraint of the interstate trade of the complainants. The court in 1913 found the allegation true, but held that an injunction in such a case could not issue to a private party but only to an officer of the Federal government. Similarly, in so far as the complainants relied on the New York laws, relief could, in the court's view, be obtained through an injunction obtained by the New York State government. A similar view was taken in 1914 by the Circuit Court of Appeals. This court held the actions of the unions not to be malicious and not to be directed against the complainants personally, so that, regardless of whether the combination was obnoxious to the common law or the anti-trust acts, no injunction could issue.

The case was first argued before the U. S. Supreme Court in May, 1915. Owing to retirement of Justice Hughes it was reargued in October, 1916; decision was rendered in June, 1917. The majority of the court held with the lower courts that violations of the anti-trust laws could not be remedied by injunctions issued to private persons; this was held to be true regardless of whether injury had been shown or not. Justice Holmes, who wrote the majority opinion, held that, although the Clayton Act established the right of private parties to an injunction in certain cases, the general purpose of that act prevented such injunction in the case at hand. Four justices dissented. In their view precedents and the opinions of lower courts were conflicting; and the Clayton Act, although it safeguards labor unions when pursuing their legitimate objects by lawful means, intended only to prevent them from being considered illegal combinations or conspiracies merely because they were organized, and was not designed to enable them to carry out policies injurious to the property rights of others. The result of this decision was to leave the meaning of the Clayton Act in relation to labor organizations and the scope of the latter's "lawful" practices still unclear.

GRANT V. BUILDING TRADES COUNCIL. Another important decision was that of the Minnesota Supreme Court in February in the case of the Grant Construction Company *v.* the St. Paul Building Trades Council. The latter had declared the former unfair and urged working men not to work for it or for any concern having subcontracts with it. The State District Court refused a restraining order to the company which then appealed to the State Supreme Court. The plaintiffs admitted that the council and its membership had not committed any unlawful act, but held that the combination of their acts resulted in unlawful "organized economic oppression." The court held that it was not aware "that it has ever been held that many lawful acts done by the same person or body of persons can constitute an unlawful whole." The opinion definitely upheld the right of labor either singly or collectively to refuse to work for any employer, even though such employer be other than the one by whom the complaining workmen are employed. See LABOR; LABOR, AMERICAN FEDERATION OF; LABOR LEGISLATION; TRADE UNIONS.

LEGISLATION. New laws in Minnesota and

Utah specifically legalize labor organizations and limit the issuance of injunctions in labor disputes. Both laws prohibit the issuance of injunctions to prevent termination of employment, or otherwise except to prevent irreparable injury to property. Both laws also declare that labor is not a commodity or article of commerce. The Minnesota statute does not restrain any agreement among workmen to better their conditions unless such act is illegal if done by one person. On the other hand, the act may not be used to curtail the powers of the courts or of executive officers when irreparable injury is threatened by violence or unlawful acts or acts involving "criminal syndicalism," defined as the resort to crime, sabotage, or terrorism to secure social or industrial reform. The Utah law omits this reference to syndicalism; it specifically prevents the use of injunctions to prevent persons from peacefully obtaining information or communicating it to others or persuading others to work or abstain from working. Injunction may not be used in industrial disputes to prevent action lawful in the absence of such dispute. Not the least important provision of the Utah act is the guarantee of right of trial by jury in cases of contempt of court, except where contempt is committed in the immediate presence of the court.

INLAND WATERWAYS. The congestion of freight on the railways of the United States and the demand for more adequate transportation service led to an increased utilization of inland waterways during the year 1917 and a special report for the last six months of that year was made to the secretary of commerce. The object of the campaign undertaken by the Department of Commerce was to demonstrate to the public that the commercial use of the navigable streams and waterways of the United States had become necessary as a war measure, and in the development of an adequate and economic system of transportation for both domestic and foreign commerce after the war; and in the second place, to show that there was a need of adequate terminal facilities to coordinate river and rail transportation and storage, as well as the establishment of water transportation routes, adequately financed and under competent business supervision, to restore water transportation to a sound and practical basis.

During the year, St. Paul, Minneapolis, Moline, Rock Island, Davenport, and Muscatine, on the upper Mississippi River, were building modern terminals and storage facilities; and on the Warrior River, Tuscaloosa and Demopolis; and Montgomery, Selma, and Mobile, on the Alabama River, were preparing plans for river terminals. Memphis voted $500,000 in bonds for the construction of a terminal at that point; and Greenville, Miss., was also manifesting a definite interest in the same direction. At La Salle, Ill., plans were prepared for a river and rail terminal with two slips so that there could be developed at this point an industrial district. Peoria was planning the construction of a quay wall to reclaim a large area in front of the city, and there to construct a modern terminal. The river terminal at Kansas City which had been in existence for several years previously, was being extended and elevators were being added. The Erie Canal both at Buffalo and New York was being supplied with terminals as well as at intermediate points along the route. Government barges had been placed in service on the upper Mississippi River by the War Department, and a water service was established between Florence, Ala., and Peoria, Ill., a fleet of barges and towboats being ordered for the increase of these facilities. With the shortage of cars in Louisiana sugar was being moved by barge from plantations to New Orleans. A navigation channel on the Great Lakes to the navigable Illinois River, thence to the Mississippi, which had been under discussion for a number of years, was renewed during the year. The facilities of the Missouri River between Kansas City and St. Louis were being used as never before, and above Kansas City local navigation was successful where the channel depth was adequate. At New Orleans, the terminal and waterfront storage system coördinating river, rail, and ocean transportation was being developed. See CANALS; DOCKS AND HARBORS; SHIPPING.

INORGANIC CHEMISTRY. See CHEMISTRY, GENERAL PROGRESS OF.

INSECTS. See ENTOMOLOGY.

INSECTS AND THE PROPAGATION OF DISEASE. New evidence of the responsibility of insects in the transmission of disease was constantly being brought forward and in many cases substantiated by modern bacteriological proof. Kraus traced an epidemic of dengue in Argentina to the swarms of mosquitoes of the *Culex fastigans* and *Stegomyia fasciata* varieties which were exceptionally prevalent during the season the epidemic occurred. No direct proof, however, was forthcoming to back his opinion, since no microörganism could be detected in the blood of patients by the microscope, and none could be cultivated from it. Pizzini, of Bergamo, Italy, implicated the body louse in the spread of cerebrospinal meningitis. He ruled out aërial contagion on the circumstance that the naso-pharyngeal secretions were always found free from meningococci, whereas the germ could be cultivated from the blood in practically all cases. The rôle of lice in the transmission of typhus fever is discussed elsewhere. See TYPHUS FEVER, WOLHYNIC FEVER and TRENCH FEVER.

INSTITUTE OF FRANCE. See ACADEMY, FRENCH.

INSURANCE. The year 1917 like its immediate predecessor was one of marked prosperity for insurance companies. Aside from the expansion of business the more conspicuous developments were the continued increase in the popularity of group insurance, whereby a corporation insures a whole or a part of its employees against sickness, injury, or death; the continued readjustment of the basis of fraternal insurance; and the entrance of the United States into the field of life and accident insurance. See also SOCIAL INSURANCE; and WORKMEN'S COMPENSATION.

LIFE INSURANCE. The most complete summary of life insurance statistics is contained in the *Annual Report* of the Superintendent of Insurance of the State of New York. The 58th *Report* (August, 1917) showed that there were doing business in that State 37 life insurance companies, including 12 New York State companies, 23 companies of other States, and 2 United States branches of German insurance companies. The gross assets of these 37 companies on December 31, 1916, were $5,144,000,000.

These assets included stocks and bonds, $2,378,000,000; bonds and mortgages, $1,651,000,000; loans on policies, $693,000,000; and cash, $84,862,000. The liabilities of the combined companies aggregated $4,853,000,000, including reserves of $4,320,000,000; and dividends, $394,970,000. The total surplus was $152,266,000, not including special funds of $128,144,000. The total incomes for the year were $991,452,000, including premiums of $736,000,000 and interest and dividends to the amount of $221,000,000. Disbursements totaled $720,625,000, leaving an excess of income over disbursements of over $272,000,000; the disbursements included claims paid, $305,000,000; lapsed, surrendered, and purchased policies, $100,733,000; dividends to policy holders, $119,715,000; commissions, $65,806,000; and salaries, medical fees, and other wages, $62,529,000. During the year there were issued 1,209,000 new policies, amounting to $2,296,000,000 insurance. In addition over 48,000 old policies were revived and 1095 policies were increased. There were terminated during the year a total of 655,862 policies; of which 82,546 were terminated by death; 33,983 by maturity; 78 by disability; 132,759 by expiry; 158,299 by surrender, and 244,787 by lapse. The net increase in policies in force was 606,524. The aggregate number of policies in force, December 31, 1916, was 8,891,679, amounting to $16,814,000,000. This was an increase for the year of $1,843,373,000 in the amount of life insurance in force. These thirty-seven companies are estimated to transact about nine-tenths of the life insurance business of the country.

Fire and Marine Insurance. In recent years the average estimated losses from fire in the United States and Canada has been about $225,000,000. The disastrous fires which occasionally occur send the losses for individual years conspicuously above this average. During 1917 the total exceeded the average on account of a considerable number of destructive fires partly of incendiary origin and partly connected with accidental explosions in the manufacture and handling of munitions. Among these may be mentioned the terrific explosions on Black Tom Island in New York Harbor and of the French munitions ship in Halifax Harbor. According to the report of the New York Superintendent of Insurance there were 251 fire and fire-marine companies doing business in that State at the close of 1916, besides twenty-four companies devoted exclusively to marine insurance. The aggregate resources of the fire and fire-marine companies was $806,939,000, including stocks and bonds amounting to $567,303,000; uncollected premiums of $69,702,000; and cash, $71,747,000. These 251 companies had total liabilities of $443,639,000 not including $102,936,000 of paid-in capital and $206,363,000 of net surplus. Their aggregate incomes amounted to $473,933,000, of which $424,272,000 was from premiums and $29,776,000 from interest and dividends. The total disbursements were $422,790,000, of which $210,007,000 went for losses; $88,533,000 for commissions; and $34,859,000 for dividends. Twenty-six of the companies showed disbursements exceeding income. The amount of fire risks in force December 31, 1916, was $68,663,804,000.

There were thirty-nine marine insurance companies doing business in New York State including the marine departments of fire-marine companies. They showed total assets of $6,675,000,000. The aggregate marine and inland insurance risks in force were $2,480,824,000.

The importance of foreign fire insurance companies with branches in the United States is shown by the fact that sixty-three such companies were included in the above. In the year ending December 31, 1916, they showed total incomes of $129,667,000; total disbursements of $116,977,000; their total assets were $152,322,000; and the total amount of fire risks in force with them was $19,474,506,000, besides $149,478,000 marine and inland insurance risks. There were in addition thirty-four foreign marine insurance companies with branches in New York State. During 1916 they collected $38,773,000 of gross income; and at the end of that year had $842,336,000 of insurance in force.

The entire group of fire, fire-marine, and marine insurance companies reporting to the New York State Department covered $71,144,628,000 of insurance risks in force. During that year these companies had contracted to carry $94,095,000,000 of risks for gross premiums of $763,467,000, or an average premium of $0.8114 for every $100 of insurance. See Fire Protection.

Casualty, Credit, Fidelity, and Surety Insurance. A conspicuous feature of insurance progress in recent years has been the extensive development of the great variety of insurance risks included under the above headings. Here are included not only workmen's compensation and employers' liability insurance, but insurance against all kinds of accidents, business losses, burglaries, automobile injuries, health, and various other contingencies. The superintendent of insurance of New York State reported (September, 1917) that there were seventy-one companies included in this group doing business in that State on December 31, 1916. They had total assets of $234,038,000, an increase of 14 per cent in one year. Their total liabilities excluding $46,900,000 of capital and $42,125,000 of surplus were $145,012,000. Their aggregate income from all sources was $187,358,000 of which $168,590,000 was from premiums. Sixty-six of the companies received $35,381,000 more than they disbursed, but five companies disbursed $211,000 more than they received. Total disbursements were $152,187,000, including $65,717,000 for claims paid, $4,572,000 for dividends to stockholders, and $81,898,000 for commissions and other expenses. The sources of income were as follows: accidents, $27,658,000; health, $7,607,000; liability, $38,690,000; workmen's compensation, $47,950,000; fidelity and surety, $23,301,000; plate glass, $4,807,000; steam boiler, $3,445,000; burglary and theft, $5,237,000; automobile and teams property damage, $7,273,000; workmen's collective, $209,000; other classes, $2,411,000.

Title and Mortgage. The aggregate assets of the ten real estate title and mortgage guarantee companies doing business in New York State were $117,322,000 on December 31, 1916. They had a total capital of $24,705,000, and aggregate surplus of $30,224,000. Their incomes for the year amounted to $11,685,000; and their disbursements to $10,372,000.

Assessment Associations. Recent years have seen a very marked development of associations of persons in similar trades or professions or having other ground of mutual trust and interest for the purpose of life or accident insurance. Such associations are the following: Commercial Travelers' Accident; Expressmen's Mutual Benefit; Insurance Clerks' Mutual Benefit; Jewelers' Safety Fund Society; Masonic Life; New York Physicians' Mutual Aid; Postal Employees' Mutual Aid; Swedish Mutual Aid Society "Scandia"; Telegraph and Telephone Life Insurance Association. The report of the superintendent of insurance of New York State (October 29) showed that there were twenty-five such associations in that State on December 31, 1916. They had aggregate assets of $4,149,000; total income for the year of $2,835,000; total disbursements of $2,610,000; and they had in force 184,525 certificates of insurance amounting to $94,056,000.

Fraternal Insurance. As in all recent years one of the main problems of fraternal insurance was the readjustment of rates of assessment so as to accord with actuarial principles. Of fifty-five assessment fraternal benefit societies reporting to the New York Insurance Department, only fourteen showed a ratio of assets to liabilities of 100 per cent or more. In other words, the solvency of forty-one of them was questionable. So general, however, has become the realization that a fraternal order cannot become permanent until its rates or assessments are on a sound actual basis, that every large fraternal society has either already gone through the painful process of readjusting its rates or has begun serious consideration of the matter. Another recent development is the extension of the fraternal idea to include all members of families, thus permitting the fraternal societies to carry infant and child insurance. At the December, 1916, convention of insurance commissioners this extension was approved. This whole-family type of benefit, however, was opposed by various insurance commissioners, notably Superintendent Jesse S. Phillips, of New York State. In his report (June, 1917), he indicated that if fraternal societies are to have the privilege of carrying child insurance they should be required by law to place their entire business on a sound actuarial business.

No accurate statistical investigation of fraternal insurance in this country has been made in recent years. It is known that there are several hundred benefit societies scattered throughout the country. In New York State such societies are required to file reports with the insurance department which thus acquires information regarding all of the larger bodies. The seventy-four fraternal orders thus reporting showed total assets of $186,675,000 on December 31, 1916. Their liabilities aggregated $72,837,000. Their total income was $110,342,000, of which $100,605,000 had been received from members. The total disbursements were $85,430,000 of which $15,301,000 went for expenses and the remainder in payments to members. These seventy-four orders had a total of 5,264,000 certificates of insurance in force on December 31, 1916, aggregating $6,482,282,000 insurance. Only 637,381 of these certificates aggregating $533,000,000 insurance were in force in New York State. Some of the largest of these associations with the number of insurance certificates and the amount of insurance in force December 31, 1916, were as follows: Supreme Tribe of Ben Hur, 86,349, $85,251,745; Independent Order of Brith Abraham, 205,817, $102,908,500; Order of Brith Abraham, 57,460, $28,730,000; Independent Order of Brith Sholom, 52,457, $25,699,200; Brotherhood of American Yeomen, 229,602, $302,800,000; Catholic Mutual Benefit Association, 59,089, $76,768,500; Independent Order of Foresters, 186,103, $182,012,224; French Canadian Artisans' Society, 43,542, $33,080,532; Knights of Columbus, 117,968, $124,941,334; Knights of Pythias, 71,682, $96,398,817; Ladies' Catholic Benevolent Association, 154,675, $128,327,500; Ladies of the Maccabees, 43,110, $31,728,250; Maccabees, 302,531, $364,332,477; Modern Woodmen of America, 1,008,410, $1,588,098,500; National Union, 56,722, $103,052,367; Order of United Commercial Travelers of America, 75,051, $375,255,000; Polish National Alliance of the United States, 117,189, $67,008,600; Protected Home Circle, 97,897, $83,717,250; Royal Arcanum, 177,235, $305,665,528; Royal Neighbors of America, 318,772, $326,773,500; Travelers' Protective Association of America, 59,329, $296,645,000; Woman's Benefit Association of the Maccabees, 175,252, $132,026,049; Supreme Forest of Woodmen Circle, 170,631, $169,336,100; Workmen's Circle, 55,273, $15,318,300; Workmen's Sick and Death Benefit Fund, 53,567, $13,391,750.

Government Insurance. Immediately upon the entrance of the United States into the war, there was much discussion of the most desirable method of compensating soldiers and sailors for injuries and their families for deaths due to military and naval activities. It was almost universally agreed that the deplorable evils of the Civil War pension system should not be repeated. Consequently on July 2 the Secretary of the Treasury called together representatives of insurance companies to confer on the possibilities of an insurance scheme to cover the war risks of soldiers and sailors. About the same time the Committee on Labor of the Advisory Commission of the Council of National Defense appointed Judge Julian W. Mack, of Chicago, as chairman of the Committee on Compensation for Soldiers and Sailors and Their Dependants. These committees coöperated with the Bureau of War Risk Insurance already authorized to insure the lives of merchant seamen (see Workmen's Compensation). After much investigation and discussion a plan for government insurance was drawn up, approved by the president on August 7, and introduced in Congress on August 10, and finally passed October 6.

The plan provides that any person, male or female, in the active military or naval service of the United States may take out insurance in multiples of $500 for any sum between $1,000 and $10,000. Such insurance is not compulsory. Premiums payable monthly range from 65 cents per $1000 at age twenty-one to $1.20 at age fifty-one. The following persons may be made the beneficiaries of such insurance: wife, husband, child, grandchild, brother, sister, stepbrother, stepsister, adopted brother or sister, parent, grandparent, or a step-parent of either the insured or his wife. A man may not make his fiancée a beneficiary nor may he leave his insurance to his fiancée through his estate. Any policy may name any number of the allowed beneficiaries, but each beneficiary must be carefully named by his or her given or baptismal names. The insurance is issued on the "yearly renewal term" basis. The policies may be continued as term insurance for five years after the close of the war, when they will expire unless advantage has been taken of the privilege of conversion of the whole or a part (in multiples of $500), into another form of policy which the government will issue. These forms are the ordinary life, twenty-payment life, and endowment. Conversion may be made without medical reëxamination, but will require the payment of a larger premium. These premiums, however, will still be lower than those provided by private corporations for the same insurance since the government will stand all administrative expenses. The amount called for in any policy will be paid in case either of death or of total or permanent disability. It is to be paid not in a lump sum but in monthly installments of $5.75 for each $1000 of insurance carried. These payments will be continued for twenty years, or, in case of total permanent disability, as long as the insured person survives. The law provided that all persons in the service who did not apply for insurance would be automatically covered until February 12, 1918, for a total amount of $6000. This sum, in such cases, would be paid to the insured himself at the rate of $25 a month for 240 months, in case of total permanent disability, or to his wife, child, or widowed mother at the same rate in case he is killed.

Thus the Bureau of War Risk Insurance which began operations on September 2, 1914, by insuring vessels and cargoes in foreign trade, had come to include workmen's compensation insurance for sailors and seamen and this new comprehensive system of insurance against death or total permanent disability for all persons in any branch of the military service of the nation. By the close of November, 1917, it was carrying a total of more than $1,000,000,000 in war risks. See WORKMEN'S COMPENSATION.

GERMAN COMPANIES. In the latter part of 1917 considerable attention was directed to the fact that German fire and casualty insurance companies were receiving information which, if transmitted to the home government, or if utilized here by German agents, would be of service to the enemies in the United States. The following companies were affected: Hamburg-Bremen, Nord Deutsche, Aachen and Munich, Prussian National, and the Frankfort General, the latter a casualty company and the other fire insurance companies. A hearing was held by the secretary of the treasury at Washington in November. On November 26 he rendered a decision in which he held that "the safety of the United States requires that enemy and ally-of-enemy, marine, fire, and casualty insurance companies shall not be allowed to do business as going concerns." The Prussian Life Insurance Company was exempted from this order.

CANADA. In addition to the care of its soldiers as described under Workmen's Compensation (q.v.) numerous localities in Canada protected the families of enlisted men by life insurance. For all cities except Toronto the policies were issued by United States companies, and in all cases the premiums were paid by the municipalities. In Toronto three quarters of the insurance was carried by the city itself. Policies were for $1000 and gave protection until death in service or six months after discharge. In most cases the beneficiaries received their payments in monthly installments of $30 each, the city allowing interest at 4½ per cent on unpaid balances.

INTERALLIED NAVAL COMMISSION. See UNITED STATES AND THE WAR.

INTERNAL COMBUSTION ENGINES. During the year, a considerable number of large gas engines were under construction for steel mills. Some of these, it was stated, would exceed 4000 horsepower and would be used for blowing and for driving electric generators. One unit completed during the year was 84 by 60 in. on the air end and 46 by 60 in. on the gas end. Even larger blowing engines were under construction at the end of the year. The gas engine, however, which had been extensively employed in steel mills in the United States, was beginning to be rivaled by the steam turbine for steel mill work on account of the flexibility of the latter. In the South and Southwest adjacent to the supplies of fuel the Diesel engine was being constructed in large numbers. Capacities as large as 1000 horsepower were represented in the year's output, and the high cost of fuel led to the adoption of this form of prime mover in a number of industries. Following European examples marine types of Diesel engine were also being made and two of the largest plants in the United States were being devoted exclusively to the construction of such engines for the United States navy submarines. A new design of high-compression four-cycle heavy-oil engine was perfected during the year, and numerous improvements were made in other existing types, though the demand for smaller sizes of gas engines was somewhat restricted. The United States military forces in France employed a number of gasoline and kerosene engines for searchlights, portable lighting outfits, for driving compressors, for small repair outfits, etc., which were designed to use either gasoline or kerosene. An important development of the year was the "Liberty Motor" for aëroplanes. See AËRONAUTICS; AUTOMOBILES.

INTERNAL REVENUE. See LIQUORS and TOBACCO.

INTERNATIONAL COMMITTEE ON ATOMIC WEIGHTS. See CHEMISTRY.

INTERNATIONAL LANGUAGE. The discussion continues between the advocates of Esperanto, who try to keep the fate of their artificial language aloof of the great world war, and those who insist that Esperantist propaganda has surreptitiously been taken over by the German intriguers to neutralize the progress of English and French as international languages (at the expense of German). An American has entered the field now to support, with philosophical arguments, the cause of the Chapelier plan (see YEAR BOOK of last year) which has been favored by the well known French writer, Ernest Charles. At the request of the latter, Professor Mark Baldwin, formerly of Princeton and Johns Hopkins, elected membre correspondant de l'institut de France in 1911, has published a substantial article on the question, in *Le Semeur* of August-September, 1917. His argument runs as follows: Language has two "functions": to express the "useful" things of everyday life, and to express the "feelings, the emotions, the art of humanity." English answers the first purpose, French the other—"practical character of the first, refinement of the other." Now, English and German are struggling to win the fight on the ground of usefulness; but English wins—both with regard to the areas where the language is actually spoken, and, even more, on account of its intrinsic simplicity as a language. French is without rival in art; in Mexico, e. g., where Professor Baldwin lived for several years, they read much French literature, and, moreover, they read in French translation the masterpieces of other literatures. Thus, let us solve the question of the international language by the scheme proposed by Chapelier, Bréal, Ernest Charles, i. e., let English be made compulsory in all French schools, and, vice versa, let French be made compulsory in the schools of all English-speaking countries. This will force the rest of the world to fall in line. "Our soldiers have already begun to prompt this way of consolidating the political alliances . . . four or five million Englishmen are in France, not to speak of half as many, and possibly that many Americans to come. . ."

INTERNATIONAL PEACE AND ARBITRATION. The continuance with unabated violence and vigor of the European war and America's entrance into it has resulted in a more active discussion of peace and peace terms, and a national declension of interest for the time in arbitration. Nothing was done in this latter field during 1917 further than the rendering by the Central American Court of Justice of two decisions on March 9.

According to the world peace foundation the attitude of Nicaragua in both the Costa Rican and Salvadorean cases and the fact that the Central American system of conventions is decennial, has created much discussion respecting a new Central American conference, which is due to be held at almost any time, and which is expected to result in much closer relations among the five Central American republics, perhaps even to the extent of federation. It is to be expected that arbitration will be the corner stone of any such development.

During the opening months of the year, before America's entry into the war, the three militant peace organizations which were most active throughout the United States were the Woman's Peace Party, the American Union against Militarism, and the Emergency Peace Federation, all three of which had come into existence since the beginning of the war in August, 1914. They became, however, far more conspicuous in their activities for peace than the older and more conservative peace societies that had been in existence before the war.

THE WOMAN'S PEACE PARTY, which became the American branch of the International Committee of Women for Permanent Peace, had been organized in January, 1915. Miss Jane Addams was chairman and the national office was at 116 South Michigan Avenue, Chicago, Ill. During 1917 it maintained some 200 local branches throughout the United States, which were independent of each other and of the national board and carried on different kinds of propaganda, holding various lectures and publishing various pamphlets against war. The Woman's Peace Party of New York City, with Mrs. Margaret Lane as executive secretary, and headquarters at 70 Fifth Avenue, was one of the branches most active in opposing the entrance of the United States into the war.

THE AMERICAN UNION AGAINST MILITARISM, organized first in January, 1916, as "The Anti-Preparedness Committee," had its headquarters in the Munsey Building, Washington, D. C. From there it sent out bulletins to its members throughout the country, keeping them in touch with the latest legislation at the Capital. On January 13-16, 1917, a series of important public hearings was held before the Senate Committee on Military Affairs, and later a deputation went to President Wilson to urge coöperating with other neutral nations in a policy of armed neutrality. As soon as America's entry into the war seemed imminent, the American Union Against Militarism urged a national referendum on the question, and itself held an informal postcard referendum in representative congressional districts in different parts of the country, which showed a vote of 4 to 1 against America's declaring war. The chairman of the union was Miss Lillian D. Wald and later Amos Pinchot. Miss Crystal Eastman was the executive secretary.

THE EMERGENCY PEACE FEDERATION was not organized until after the crisis at the beginning of February, 1917. It was in part an outgrowth of "The Neutral Conference Committee," and believed that America could best serve the world by remaining neutral and working for a just and lasting peace. During the two months before America's entry into the war, the federation rapidly became the most conspicuous organization working, as its stated object declared, "to keep America out of war and its attendant consequences." Mrs. Henry Villard was chairman, and Lella Faye Secor and Rebecca Shelly were secretaries. Its headquarters were at 70 Fifth Avenue, New York City, and branches were formed in various States. Mass meetings were held in Madison Square Garden in New York, and in the other big cities, and thousands of telegrams, letters, and pamphlets were sent throughout the country. A legislative bureau was maintained at Washington and hearings were held before the Foreign Relations Committee of the Senate and the House Committee on Foreign Affairs. Three large delegations to the capital were organized; one on Lincoln's Birthday, one on Washington's Birthday, and one on April 2, on the very eve of the declaration of war. After the declaration of war, the federation was reorganized, and took as its object: "To defend American ideals of liberty and democracy in war time and to work for an early and enduring peace." It gradually became merged in the People's Council, to whom it handed on this combined programme for "peace and democracy."

THE PEOPLE'S COUNCIL OF AMERICA FOR DEMOCRACY AND PEACE was evolved by gradual stages from the coördination of the three peace organizations already discussed and innumerable other forces working for peace and for democracy. The entrance of the United States into the war and at almost the same time the revolution in Russia suggested the idea of uniting the democratic forces in America, and during April and May several efforts to do so were made.

On May 2, at the Hotel Astor in New York, a meeting was called of some forty citizens representing various labor, socialist, religious, pacifist, and civic organizations. At this meeting a tentative programme was adopted (1) on the subject of peace, (2) on the preservation of democracy, and (3) on the maintenance of standards. The meeting favored a "peace in harmony with the principles outlined by the President of the United States," and the formula that had been announced shortly before by the revolutionary government of Russia was so modified as to read: "no annexation of territory and no punitive indemnities." On the basis of this tentative programme a call was sent out to delegates from all over the country to a conference on democracy and peace to be held at the end of the month.

The First American Conference for Democracy and Terms of Peace was accordingly held on May 30 and 31 in New York in the Madison Square Garden Theatre and was attended by delegates from forty-three States. Six sessions were held, many addresses were given, and various resolutions were passed. The chairman announced that "any resolution in any way advising any action contrary to law will be declared out of order," and this principle was held to. Committees (1) on Terms of Peace, (2) on American Liberties, and (3) on Industrial Standards drew up resolutions developing the tentative programme of the Hotel Astor meeting. An organizing committee was also appointed by the conference in order "to organize a permanent delegated people's council." The resolutions of the conference were enthusiastically endorsed by a mass meeting of over 1500 citizens held in Madison Square Garden on the night of May 31.

A second conference on democracy and terms of peace was held in Chicago on July 7 and 8, and others were held in Philadelphia, Los Angeles, San Francisco, Salt Lake City, and Seattle, all adopting with slight modifications the same resolutions and all preparing the way for the people's council.

Meanwhile, from June 1 to September 1, the Organizing Committee of the People's Council was laying its plans for the constituent assembly at which the People's Council was finally to be constituted. A periodical, called the *Bulletin of the People's Council of America* was published. Organizers were sent out throughout the United States. Hundreds of trade unions, Socialist locals, single tax groups, workmen's councils, and 126 local people's councils became affiliated in the work. Delegates were sent to the constituent assembly from organizations representing in all over two million members.

The call that was sent out to these delegates gave the following programme of the objects of the People's Council: "Terms of Peace. 1. To demand that our government shall announce immediately in concrete terms its war aims, and shall seize every opportunity to achieve those aims through negotiation unhampered by the ambitions of other governments. 2. To strive for an early, democratic, and general peace in harmony with the principles outlined by Free Russia: a. no forcible annexations; b. no punitive indemnities; c. free development for all nationalities. 3. To urge international organization for the maintenance of world peace. American Liberties: 1. To defend our constitutional rights of free speech, free press, peaceful assemblage, and the right to petition the government. 2. To secure democratic control of foreign policy, and a popular referendum on all questions of war and peace. 3. To work for the repeal of conscription laws. Economic Policies: 1. To safeguard labor standards. 2. To meet the cost of war by the taxation of wealth. 3. To reduce the high cost of living."

The first Constituent Assembly of the People's Council of America for Democracy and Peace was held, in spite of many difficulties, on September 1 and 2 at the West Side Auditorium in Chicago. Addresses were made by Dr. Judah L. Magnes, of New York, by Congressman William E. Mason, of Illinois, by former Senator John D. Works of California, and by James H. Maurer, president of the Pennsylvania State Federation of Labor. Committees were appointed and developed still further the programme that had gradually been evolved. The chief new resolution was one enthusiastically endorsing the terms of peace outlined in the reply of President Wilson to the Pope which had appeared a few days earlier. Two chosen delegates representing each State and the various standing committees were given power to complete the arrangements for the permanent organization of the People's Council.

Two weeks later, on September 15 and 16, the various standing committees and these State delegates met in New York and perfected the permanent plans for the People's Council. Scott Nearing was chosen chairman, and Louis P. Lochner executive secretary. The following executive committee was elected: Morris Hillquit, New York; James H. Maurer, Pennsylvania; Jacob Panken, New York; William C. Rempfer, South Dakota; George E. Roewer, Jr., Massachusetts; Rebecca Shelly, Michigan; William Short, California; Harrier Park Thomas, Illinois. National headquarters were established at 138 West 13th Street, New York City.

The People's Council of America, as finally established, has taken as its motto: "Government of the people, by the people, for the people." Opponents of the movement say that its efforts have tended to weaken the home government and to strengthen the enemy. Defenders of the movement answer that it has tended to weaken the autocratic forces both at home and among the enemy and has strengthened the democratic forces in both countries. President Wilson has said that "peace should rest upon the rights of the peoples, not the rights of governments," and the People's Council believes that it is one of the forces working for the rights of the people throughout the world. Communication has been established with the Workmen's and Soldiers' Councils in Russia and England and the People's Council of America has become a part of the great international movement.

Among the various other subsidiary movements, some of which have been merged in the People's Council or have become inactive since its organization, are the Intercollegiate Anti-Militarist League, the No-Conscription League, the Civil Liberties League, the Bureau of Legal First Aid, the American Legal Defense League, the American Union for a Democratic Peace.

THE ATTACK ON HERBERT S. BIGELOW. About to deliver a peace address at Newport, Ky., in November, Herbert S. Bigelow, a Congregationalist minister of Cincinnati, and an active and aggressive pacifist, was seized by a band of masked men, taken into the nearby woods, and horsewhipped "in the name of the poor women and children of Belgium." In commenting on the case *The New Republic* in its issue of November 10 said: "Bigelow's case, given wide publicity, offered an opportunity to give concreteness to the president's declaration that we 'shall conduct our operations as belligerents without passion and ourselves observe with proud punctilio the principles of right and fair play we profess to be fighting for.' . . . As a whole, the press does not seem in this instance to have drawn the line between suppression of sedition and suppression of thought. It becomes doubly important, therefore, that the line be drawn by the administration itself, so clearly and so often that force used as a cure for political unorthodoxy will seem as ineffectual as force used as a means of conversion to any nation's culture."

The Socialists and Peace Movements. The entrance of America into the war resulted in a split in the ranks of the Socialist party (q.v.), the pro-German element forming a peace-at-any-price faction, which was able to maintain control of the party organization, and the loyal element which felt that, notwithstanding their peace principles, it was essential to their ultimate success to support America upon her entrance into the war. The following statement by a former official of the Socialist party (Carl D. Thompson) gives a fair idea of the loyal Socialist position:

> "Little by little, point by point, the President of the United States, and through him the government, is adopting our terms of peace.
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> "For over three years we have been urging that if there is to be any peace there should be no punitive indemnities and no forcible annexations exacted by any nation. The Russian revolution adopted that formula and announced it to the world. The Pope affirmed it. And in his reply to the Pope, the president adopted it. . . .
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> "Again, we Socialists have urged for a quarter of a century, and for the last three years with increased emphasis, that there must be a general disarmament by international agreement; that there could be no peace on earth so long as the world was divided into two warring camps with monstrous and unlimited armaments. This, too, the president affirms very definitely in his address to the Senate on January 22, 1917.
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> "We have also urged the necessity of a permanent organization, a federation of nations with a parliament, a court, and an international police force as the basis of permanent peace, and as a means of bringing it about. At one time or another the president, and through him the government has also adopted and set forth each one of these ideas. In his address before the League to Enforce Peace, May 27, 1916, and again in the government statement 'How War Came to America,' and in the president's address to the Senate January 22, 1917, these ideas are definitely affirmed.
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> "Even more important than these we Socialists have insisted upon the principle of the free development of nations,—that no nation should be crushed or dismembered, or its territory stolen from it; that all of them alike, the great and the small, should be free, independent, and self-governing, and being so should then be federated upon just and equitable terms. This, too, the president has affirmed. 'The dismemberment of any nation,' 'the handling of any people from sovereignty to sovereignty,' and other imperialistic plans are distinctly repudiated in the president's reply to the Pope and elsewhere.
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> "And, most important of all, we have insisted from the beginning that the fundamental causes of the war are economic; that the fight for foreign markets, the commercial rivalries of nations, the attempts of some to secure advantages over the others in trade were the direct causes leading to war; and that until these causes were removed there could be no peace. And, further, that even if the war were stopped and this economic war continued it would inevitably lead to other wars. This, too, the president has come to see—at least in so far as it applied to international relations. He does not yet see the deeper fact that it is the exploitation of labor WITHIN each nation that leads directly to the efforts of the capitalistic class of that nation to make economic war upon rival nations. . . . But this much at least he does see and affirms—that the economic war of nation upon nation leads to actual war. And he very definitely says that this must cease. 'No peace,' he says, 'can rest securely upon political or economic restrictions meant to benefit some nations and cripple or embarrass others.' . . . 'Peace on equal terms in the economic opportunities of the world.' The freedom of the seas, and free trade and economic justice between the nations must be established.
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> "All of which, we believe and hope, is going a long way towards peace. It is certainly going a long way on the programme urged by the Socialists in every nation.
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> "If the president and our government will stick to this programme, if they will insist on holding the other allied nations to it—we shall have peace. And it will be a more permanent peace than ever before established in the world."

A League of Nations. In the opinion of the secretary of the World Peace Foundation (Denys P. Myers): There is no doubt but that the conception of the League of Nations dominates all peace ideas. In one form or another the old established and the new organizations are working that lode. There are various minor differences between programmes, even those most similar: the programmes of the American Institute of International Law, the American Peace Society, A League of Nations Society, League to Enforce Peace, Central Organization for a Durable Peace, the French League for a Society of Nations, the Fabians and the World Court League. There is considerable harmony in the essential ideas of all these plans, particularly respecting organized arbitration and conciliation and periodic conferences. Some of the plans are much more detailed than others. Divergence centres around the element of force. This foundation has committed itself to the provision of a sanction to the extent of enforcing trial of pacific settlement before a resort to war. Support of the programme of the League to Enforce Peace is at present the principal activity of the foundation, because the trustees believe that the element of force, being already existent, cannot be exorcized, but can be controlled and placed behind organs of order. They believe that the world will be willing to effect this as soon as opportunity offers. This attitude is characterized by its practical aims. Others, starting from the philosophical truth that force is not a permanent element, omit a sanction. Others hold that the organization of pacific settlement and conferences is not enough and provide much additional machinery. The result of all of these plans is that the world is being familiarized as never before with the problems of organizing a better world and their probable solution. The deep interest of people everywhere in these programmes is evidenced by the number of independent projects which reach such an office. Together the propaganda and the proved interest constitute a mandate which no peace negotiations will be able to disregard.

League to Enforce Peace. The war time programme of the League to Enforce Peace is set forth in a letter from its secretary (William H. Short):

> "First in importance is that of opposing and preventing a premature peace. From this time on, the Hohenzollerns will be continually attempting to create a sentiment in favor of an inconclusive peace that will leave them masters of Austria, Bulgaria, and Turkey, and in physical possession of as much as possible of the lands which they have over-run with their armies. If a peace is made before German militarism has been humbled, Prussianism will be victorious. . . . All the leaders of our movement are convinced that it is utterly useless to talk about the creation of a league of nations to enforce peace unless German militarism is destroyed. If this is not done, and done thoroughly, either by the Ger-

man people themselves or by the Allied force, the Central Powers will themselves compose a league of nations to enforce peace, and its work will be done ruthlessly and completely.

"The second function in the performance of which we have some degree of responsibility, is the preparation of the basis for a just peace at the end of this war, guaranteed by the combined force of the democratic nations of the world. A man may be compelled at times to thrash his neighbor, but it is quite clear that the basis for future good relations is not established by this alone. The terms and the temper of the peace established between them after the painful process is over has considerable to do with their future friendship. It is now generally acknowledged that the bad temper and bad judgment with which the reconstruction of the South was carried through by northern politicians after the Civil War, did much to prevent the successful results that should have followed the magnanimity of Grant, and the well-conceived plans of Lincoln.

"Our country has lately had opportunity to test the wisdom of the maxim, 'In time of peace prepare for war.' The reverse, though not so often quoted, is equally true, that in time of war preparation must be made for peace. . . .

"The President of the United States is urging the main contention of the League to Enforce Peace as the fundamental feature of American foreign policy. The Allied nations have pledged themselves to its support. Small neutral nations of Europe have espoused it. The Pope has declared in its favor. Even the Central Powers have been compelled, by the public sentiment of the world, and perhaps of their own people, to give it lip service.

"But the formulation of our proposals (See YEAR BOOK for 1916) does not release us from further responsibility. The original proposals were frankly put forth as a tentative and minimum programme. It will be the duty of our League to have, when the war ends, a programme ready for our peace plenipotentiaries prepared in view of the vast movement of thought and events that has taken place in this and other countries during these long and stirring years of war; and to be able to relate and harmonize that programme with the many difficult problems that will come up in the great settlement.

"A third function is that of educating the public regarding the purpose of the war, to amplify and repeat the words of the president regarding it and, even in hours of passion that may seize the country, to prevent the people from forgetting what it is we are contending for. A leading member of the Cabinet, in the days immediately preceding our entrance into the war, said that, if we went in, it would be solely for the purpose of making the right kind of peace; that it was important, therefore, that from the very beginning this fact should be held before the eyes of the country, and that he hoped the League to Enforce Peace would fulfill this important national function.

"Everybody wants peace,—not an immediate peace, not a dishonorable peace, not a peace that will mortgage the world to autocracy and militarism, but a just, a thorough-going, a final peace such as can be attained only by the destruction of Prussian militarism. Such a peace is all that nonaggressive nations ever fight for. Every person of experience knows that in a world crisis like this, the man or the organization that can best embody and interpret to the people the things that are in their own hearts, becomes the leader to whom they listen, and whom they gladly follow. . . .

"A fourth function, while not peculiarly and exclusively our own, we are privileged to share on not less than equal terms with other patriotic organizations. It is that of taking part in 'Win-the-War' activities as occasions offer. Believing, as we do, that the war must be won before the objects of our League can be accomplished, it is logical and fitting that we transmute our convictions into deeds. It is, I think, in recognition of this fact, that the Secretary of the Treasury chose the League as the channel through which to address all patriotic organizations in the country, inviting their participation in the second campaign for the sale of Liberty Bonds.

"In view then of the essential and honorable functions which our League has to perform, I am sure you will agree with me that a spokesman of the League makes a most serious error when he prefaces his remarks with an apology for the word 'peace' in our title, or by making it apparent in any other way that he feels under the necessity of justifying his presence and his message. If he fulfills one of the logical and peculiar functions of the League, his message will be the complete justification of his presence on any platform and of the organization which he represents. He will justly feel that it would be an impertinence and a cause for offense, to organize a meeting at this time to talk merely about peace, whether under the auspices of our League or of any other organization; that it would be poor tactics to ask people at any meeting to listen to an address on the League that did not relate it closely to the great struggle that is now on, or to adopt a resolution which declared that the most important question now before the country was the obtaining of a permanent peace. If our League has not something to do in the winning of this war, that no other agency can do so well, I for one should ask for a leave of absence, in order to engage in some work that has to do directly with the defeat of Germany."

An important publication of the league was *A Reference Book for Speakers*, of which there were three parts: "Part I. The Things Against Which We Are Fighting;" "Part II. The World for Which We Are Fighting;" "Part III. Keeping the World Safe."

THE MENACE OF A PREMATURE PEACE. In an address at Montreal, William H. Taft, the president of the league, had this to say:

"Whatever the detailed stipulations of the League to Enforce Peace may be, its operation and success must depend on the obligations of the treaty stipulations. Unless their binding effect is recognized by the nations as a sacred principle, the stipulations of the League will be 'writ in water.' The revelations and disclosures of this war will satisfy the members of the League that as long as the present military caste controls the German military and foreign policy, the league is impracticable, and would not be worth the parchment on which its obligations would be recorded.

"Those who favor permanent world peace therefore must oppose with might and main the proposals for peace at this juncture in the war. Men who look forward to a League of the World to Enforce Peace in the future can have no patience with a compromise that leaves the promoting cause of the present awful war unaffected and unremoved.

"This war is now being fought by the Allies as a League to Enforce Peace. Unless the Allies compel peace by victory, they do not enforce it. They do not make the military autocrats of the world into nations fit for a World League, unless they convince them by a lesson of defeat."

THE CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE. The declaration of the Board of Trustees of the Endowment adopted at its annual meeting on April 19 is regarded as one of the most important utterances of any peace organization in this country since the outbreak of the European war and the participation of the United States in that war. This resolution reads as follows:

"*Resolved*, That the Trustees of the Carnegie Endowment for International Peace, assembled for their annual meeting, declare hereby their belief that the most effectual means of promoting durable international peace is to prosecute the war against the Imperial German Government to final victory for democracy, in accordance with the policy declared by the President of the United States."

At a meeting of the Executive Committee of the Endowment, held November 1, the following declaration, supplementary to the above, and intended to emphasize it, was also adopted:

"In view of recent events, emphasized by the widespread intrigue of the German government to deceive and mislead the peace-loving people of the world, the executive committee of the Peace Endowment unanimously reaffirms this declaration and pledges the Carnegie Foundation for International Peace to the loyal support of those courses of action that will assure early, complete, and final victory for the arms of the Allied forces. The path to durable international peace on which the liberty-loving nations of the world would so gladly enter, is now blocked by the blind reliance of Germany upon the invincibility of German military power and upon its effectiveness as an instrument of international policy. This reliance must be broken before any other effective steps can be taken to secure international peace. It can only be broken by defeat.

"The executive committee of the Carnegie Endowment calls upon all lovers of peace to assist in every possible way in the effective prosecution of the war which has peace and not conquest for its aim."

A comprehensive understanding of the wide field of study covered by the Endowment's activities is obtained from the list of its publications, of which no less than sixty-nine titles are listed in its *Year Book.* These publications vary from small pamphlets to large volumes. Many of them are distributed gratuitously; those which appeal to a limited class of specialists and experts are sold at a price; but in order that everybody may have access to them, the Endowment has established a chain of depository libraries, widely distributed in the principal cities and in educational institutions and public libraries of the United States and other countries, where they are freely accessible. A list of these free depository libraries, numbering 626, are published in the *Year Book.*

At the April meeting of the trustees, $500,000 was voted to aid in the restoration of the devastated homes in France, Belgium, Serbia, or Russia. The personnel and equipment of the Endowment headquarters in Washington were tendered the Department of State for any service during the war, which tender was duly accepted.

The American Peace Society in its monthly organ, *The Advocate of Peace* (A. D. Call, editor), put out the following pledge which it asked all peace organizations to adopt and support:

"'I pledge my support to my government in its search for freedom and democracy!' Whatever your hope for peace, this is your thought to-day. In this pledge the American Peace Society is with you, heart and soul. In these trying days this Society has also pledged its support to the government."

In its December issue, *The Advocate of Peace* outlined the attitude of the society still further in these words:

"We must believe in law. Without law there is chaos. Law is the instrument by which the majority, individually weak and right-minded, control the few individually aggressive and criminal. Where there is no law, might and cunning prevail. Laws are rules of conduct which we are all morally bound to obey. If we will to live within the United States we by that act tacitly agree to obey the laws of the United States.

"If we gave 'aid and comfort' to Germany in these times, we disobey the most fundamental law of our land. When our chosen leaders are, in accordance with the law, bending every effort to bring the German government to terms, for any of us to harass these our representatives in authority is to stir up the dust, befog the issues, prolong the horror, give encouragement to Germany, do violence to law, and toy with treason.

"We state these elementary principles here, not because we are interested in principles merely, but because many radical persons, commonly called 'pacifists,' ignore these principles to the embarrassing detriment of the very thing they and we believe in and would advance. The so-called *People's Council* is made up largely of just such deluded persons. What has been known for a time as the *American Union against Militarism* has, we are informed, changed its name to *'American Union for a Democratic Peace,'* and its members are now evidently applying essentially the same obscurantist and disturbing methods as the *People's Council.* These perfectly sincere 'radicals' are raising the dust, getting nowhere, bringing upon themselves the contempt of healthy-minded men, and by their stupid proceedings rendering a serious injury to the cause of international peace. For any body of intelligent persons to organize themselves and to say as a body at this time, 'We are utterly opposed to the extension of militarism in this country,' would be laughable were it not so counter to the law as it is, treasonable in substance and tragical. The job of the hour has nothing to do with 'annexations,' 'indemnities,' 'economic reprisals,' unofficial 'German peace proposals.' To blur our thinking with such matters at this time is to distort our perspective, to give comfort to our enemies, and to prolong the war. The supreme duty of every man, woman, and child in America to-day is, avoiding panics and hatreds of persons, to remember the ghastly offenses of a might-worshipping aggressor, and to bend every possible effort to win and to end this war.

"When they ask us of this Society, as frequently they do, how we can 'support war with one hand and peace with the other,' we reply by pointing to our well-nigh hundred years of consistent effort in behalf of a reign of law. We cannot now turn against the only law we have left. We must and will support the only machinery we have for the maintenance of that law, namely, the United States government. If some member of the *People's Council* pathetically asks us, as one recently did, 'Who, then, is to represent the people?' our reply must be that we can recognize but one 'representative of the people' to-day, and that is not the *People's Council,* but the government duly elected and sworn to do precisely that thing. . . .

"The President of the United States signed a resolution which had been passed by both houses of the Congress, which officially declared the state of war which had been thrust upon this country. This momentous act altered completely the bases upon which we fashioned our daily behavior prior to that action. It seems difficult for many to grasp this fact, but it is a fact which must be grasped. With the situation as it is, there can be no governed world of the kind that rational men would have. Judicial processes are at the time internationally impossible. The methods of peaceable settlement must wait, because there in the way of these things stands the Imperial German government. To go back now would be disastrous. The only way to the attainment of our aims is forward. Law, justice, common sense, the world peace we purpose to establish, all call now for a perfect unity of opinion and purpose, a call which should and must be heard by us all, whether we are members of this or that 'group' or of no group at all. The clarion, unmistakable call to us all is, that we must now *end this war by winning it.*"

The American School Peace League has adopted the following programme for the war: To maintain a civic and moral stability among the youth of the country; to inspire anew a love of American institutions and American ideals; to foster civic service appropriate to youth, consciously entered upon for the nation's welfare; to promote an interchange of good-will regardless of race or nationality; to teach the value of arbitration, conciliation, and judicial settlement; to hold to the ideal of the ultimate triumph of democracy.

This organization has offered two sets of prizes to be known as the Seabury Prizes, for the best essays on one of the following subjects: (1) The Teaching of Democracy as a Factor in a League of Nations. Open to seniors in normal schools. (2) How Should the World Be Organized so as to Prevent Wars in the Future? Open to seniors in secondary schools. Three prizes of seventy-five, fifty, and twenty-five dollars will be given for the best essays in both sets. The contest closes on March 1, 1918.

The World Peace Foundation (*supra*) which is devoting its principal efforts to the support of the program of the League to Enforce Peace has discontinued its pamphlet publications and will hereafter issue in the same physical form a bi-monthly under the title *A League of Nations,* the first issue of which appeared October 1.

Various Organizations. The Lake Mohonk

Conference on International Arbitration was omitted this year. The Pan-American Division of International Conciliation continued its pamphlet publications, but in diminished numbers and size. The World's Court League has continued the publication of its monthly organ, *The World's Court*. The New York Peace Society began in November a series of bulletins of information and suggestion.

The Central Organization for a Durable Peace has as officers of its American branch, Hamilton Holt, chairman; Frederick Lynch, secretary, and Mrs. Fannie Fern Andrews, Boston, international corresponding secretary. Its "minimum programme" is:

1. No annexation or transfer of territory shall be made contrary to the interests and wishes of the population concerned. Where possible their consent shall be obtained by plebiscite or otherwise.
2. The states shall guarantee to the various nationalities, included in their boundaries, equality before the law, religious liberty, and the free use of their native languages.
3. The states shall agree to introduce in their colonies, protectorates, and spheres of influence, liberty of commerce, or at least equal treatment for all nations.
4. The work of the Hague Conference with a view to the peaceful organisation of the Society of Nations shall be developed.

   The Hague Conference shall be given a permanent organization and meet at regular intervals.
5. The states shall agree to submit all their disputes to peaceful settlement. For this purpose there shall be created, in addition to the existent Hague Court of Arbitration, (a) a permanent Court of International Justice, (b) a permanent International Council of Investigation and Conciliation.
6. The states shall bind themselves to take concerted action, diplomatic, economic, or military, in case any state should resort to military measures instead of submitting the dispute to judicial decision or to the mediation of the Council of Investigation and Conciliation.
7. The states shall agree to reduce their armaments.
8. In order to facilitate the reduction of naval armaments, the right of capture shall be abolished and the freedom of the seas assured.
9. Foreign policy shall be under the effective control of the parliaments of the respective nations.

   Secret treaties shall be void.

American Federation of Labor. At its Buffalo meeting, the federation adopted the following declarations as the basis upon which peace must be negotiated:

1. The combination of the free peoples of the world in a common covenant for genuine and practical coöperation to secure justice and therefore peace in relations between nations.
2. Governments derive their just power from the consent of the governed.
3. No political or economic restrictions meant to benefit some nations and to cripple or embarrass others.
4. No indemnities or reprisals based upon vindictive purposes or deliberate desires to injure, but to right manifest wrongs.
5. Recognition of the rights of small nations and of the principle, "No people must be forced under sovereignty under which it does not wish to live."
6. No territorial changes or adjustment of power except in furtherance of the welfare of the peoples affected and in furtherance of world peace.

In addition to these basic principles which are based upon declarations of our President of these United States, there should be incorporated in the treaty that shall constitute the guide of nations in the new period and conditions into which we enter at the close of the war, the following declarations, fundamental to the best interests of all nations and of vital importance to wage-earners:

1. No article or commodity shall be shipped or delivered in international commerce, in the production of which children under the age of sixteen have been employed or permitted to work.
2. It shall be declared that the basis work-day in industry and commerce shall not exceed eight hours.
3. Involuntary servitude shall not exist, except as a punishment for crime, whereof the party shall have been duly convicted.
4. Establishment of trial by jury.

The Southern Commercial Congress. Following is the text of a resolution adopted by the Southern Commercial Congress, representing sixteen Southern States, at the ninth annual convention held in New York City, October 15-17:

> The Southern Commercial Congress insists that the outstanding fact that we are in the most stupendous war of all time is the controlling fact which precludes all argument as to the cause and reasons and admits of no contention as to why and how.
>
> United purpose and action are essential, and we call upon all people for not only loyalty but patriotic effort. Our companions and associates as well as ourselves wish it, determined that all free States and people shall enjoy the right of self-development, that the principles of aggression shall not be recognized as civilization's highest law; that it shall not be the test of a nation's fitness, that it can mobilize the most terrible force, and use it in the most savage way; that it shall not be established that might may conquer and control right. We have no doubt as to how these questions will be settled or as to the result of the conflict.
>
> The Southern Commercial Congress stands for winning the war. It points with the deepest satisfaction to the united, the courageous, the determined support that is given to that end by the sixteen States represented in the Congress. They stand in alert and resolute loyalty behind the great leader of the nation, the commander-in-chief of its army and navy, the President of the United States.
>
> When the war is won and Germany made "powerless or free" the Southern Commercial Congress devotedly trusts, as does the Nation, that a peace may be secured that will be just and righteous and that it will be so safeguarded by a "League of honor among democratic nations" or by some other plan that it shall become the permanent bulwark and hope of civilization.

Universal Military Service. In his annual report to Congress, the Secretary of War (Newton D. Baker) disapproved universal military service, saying in part:

> "The department has not sought and does not now seek legislation on the subject, chiefly for the reason that the formation of a permanent military policy will inevitably be effected by the arrangement consequent upon the termination of the present war. Civilized men must hope that the future has in store a relief from the burden of armament and the destruction and waste of war.
>
> "However vain that hope may appear in the midst of the most devastating and destructive war in the history of the race, it persists, perhaps because we are encouraged by the analogous substitution of courts for force in the settlement of private controversies; perhaps because all the perfections of nature teach us that they are the product of processes which have eliminated waste and substituted constructive for destructive principles.
>
> "When a permanent military policy therefore comes to be adopted it will doubtless be conceived in a spirit which will be adequate to preserve against any possible attack those vital principles of liberty upon which democratic institutions are based, and yet be so restrained as in no event to foster the growth of mere militarist ambitions or to excite the apprehension of nations with whom it is our first desire to live in harmonious and just accord."

Bibliography. Carl W. Ackerman, *Germany: The Next Republic* (New York); Norman Angell, *America and the New World State* (New York); Charles Robert Ashbee, *The American League to Enforce Peace* (London); George Louis Beer, *The English-Speaking Peoples* (New York); Henry Noel Brailsford, *A League of Nations* (New York); Philip Marshall Brown, *International Realities* (New York); Charles

Roden Buxton, et al., *Towards a Lasting Settlement* (New York); Christen Collin, *The War against War and the Enforcement of Peace* (New York); Cosmos, *Basis of Durable Peace* (New York); C. Ernest Fayle, *The Great Settlement* (New York); Robert Goldsmith, *A League to Enforce Peace* (New York); George D. Herron, *Woodrow Wilson and the World's Peace* (New York); John A. Hobson, *Towards International Government* (New York); Roland Hugins, *The Possible Peace* (New York); Sinclair Kennedy, *The Pan-Angles* (New York); Henri Lambert, *Pax Economica* (New York); Theodore Marburg, *League of Nations: A Chapter in the History of the Movement* (New York); Ramsay Muir, *Nationalism and Internationalism* (Boston); Edward Leigh Pell, *What Did Jesus Really Teach About War?* (New York); Walter Alison Phillips, *The Confederation of Europe* (New York); Coleman Phillipson, *Termination of War and Treaties of Peace* (New York); Malcolm Quin, *The Problem of Human Peace* (New York); W. Sanday, *In View of the End: A Retrospect and a Prospect* (London); William H. Short, *Program and Policies of the League to Enforce Peace* (New York); Arnold J. Toynbee, *Nationality and the War* (New York); W. Trotter, *Instincts of the Herd in Peace and War* (New York); H. G. Wells, *What Is Coming: A European Forecast* (New York); Walter E. Weyl, *American World Policies* (New York); Leonard S. Woolf (and Fabian Society), *International Government* (New York).

INTERNED GERMAN SHIPS. See SHIPBUILDING; SHIPPING; UNITED STATES AND THE WAR.

INTERSTATE COMMERCE COMMISSION. See RAILWAYS.

IOCAMFEN. A liquid containing about 7.25 per cent free iodine, and obtained by the interaction of camphor seventy parts, phenol twenty parts, and iodine ten parts. The drug is said to have the antiseptic and germicidal properties of iodine as well as the analgesic and stimulating characteristics of camphor and phenol. It is used externally as a surgical dressing in wounds, joint injuries, infective processes, etc., being applied directly to the involved surfaces. It is a dark, reddish-brown, viscid liquid, having an odor of camphor, insoluble in water, but readily soluble in alcohol, ether, benzine, and liquid petrolatum.

IOWA. POPULATION. The population of the State in 1910 was 2,224,771. There is a slight increase in the population from year to year.

AGRICULTURE. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn ...	1917	11,100,000	410,700,000	$443,556,000
	1916	10,050,000	366,825,000	293,460,000
Wheat ..	1917	420,000	8,350,000	16,616,000
	1916	560,000	9,150,000	14,274,000
Oats	1917	5,250,000	246,750,000	155,452,000
	1916	5,100,000	188,700,000	90,576,000
Potatoes	1917	138,000	18,110,000	17,174,000
	1916	115,000	4,830,000	8,452,000
Hay	1917	3,160,000	[a] 3,887,000	65,302,000
	1916	3,700,000	5,920,000	53,280,000

[a] Tons.

MINERAL PRODUCTION. The coal production of the State in 1916 amounted to 7,260,800 short tons, valued at $13,530,383, which represents a decrease of 353,343 tons in quantity, and $47,225 in value. The number of men employed in the coal mines of the State decreased from 15,549 in 1915 to 14,443 in 1916.

RAILWAYS. The total mileage of single track road, on December 31, 1916, was 9934. The total mileage of all tracks was 13,812. The total mileage of single track operated was 10,382, and the total mileage of all tracks operated was 14,305.

FINANCE. On June 1, 1915, the latest year for which statistics are available, there was a balance on hand of $856,045. The receipts for the year were $8,946,045, and the disbursements $8,648,265, leaving a balance on hand on June 30, 1916, of $717,825. The State has no bonded debt since 1892.

EDUCATION. The total number of pupils of school age on June 30, 1916, was 678,846. The total enrollment was 525,579, with the average daily attendance of 398,143. The number of female teachers were 34,372 and the number of male, 2858.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the Soldiers' Home at Marshalltown; Soldiers' Orphans Home at Davenport; Clarinda State Hospital, Mount Pleasant State Hospital, Independence State Hospital, Cherokee State Hospital, all for the insane; the School for Defectives, Institution for Feeble-minded Children, State Sanatorium for Treatment of Tuberculosis, Industrial School for Boys, Industrial School for Girls, State Hospital and Colony for Epileptics, State Hospital for Inebriates, State Penitentiary, the Reformatory, and Women's Reformatory.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below.

A moratorium was provided for men in the military and naval service. This provided for the tolling of the statute of limitations as applied to the bringing of actions by men in the service and for the continuance of action against them.

A constitutional amendment granting woman suffrage was referred to the next legislature.

Provision was made for the voting of citizens absent from the State in the national service.

Laws were passed requiring the licensing of dogs and authorizing the killing of unlicensed dogs or dogs annoying other domestic animals.

The drawing of checks with fraudulent intent when the drawer has not sufficient funds to make payment is made a criminal act.

STATE OFFICERS. Governor, William L. Harding; Lieutenant Governor, E. R. Moore; Secretary of State, W. S. Allen; Auditor, Frank S. Shaw; Treasurer, W. C. Brown; Attorney-General, H. M. Havner; Superintendent of Public Instruction, A. M. Deyoe; Adjutant-General, Guy E. Logan; Commissioner of Insurance, Emory H. English—all Republicans.

JUDICIARY. Supreme Court: Chief Justice, Frank R. Gaynor; Judges, Byron W. Preston, Silas M. Weaver, Scott M. Ladd, Benj. I. Salinger, Horace E. Deemer, William D. Evans; Clerk, Burgess W. Garrett.

IOWA, STATE UNIVERSITY OF. A co-educational State institution of learning at Iowa City, Iowa. In the fall of 1917 there were 2515 students in all departments and 352 members of the faculty. Volumes in the library numbered 190,-

000. Leaves of absence were granted for war service to six members of the faculty. William Fletcher Russell was appointed dean of the College of Education; and Bird Thomas Baldwin was made professor of educational psychology and director of the Iowa Child Welfare Research Station, which was established at the university in 1917 for the scientific study of normal children of pre-school age. In 1917 there was completed a new building for the College of Dentistry which cost about $175,000; and a children's hospital, costing about $125,000 was begun. The university acquired by purchase a tract of land, 25 acres in extent, west of the Iowa River as an addition to the campus. Productive funds in 1916-17 amounted to $364,301. The total income from all sources was $1,347,803. The State University of Iowa was founded in 1847. President, Walter Albert Jessup, Ph.D.

IRELAND. An island west of Great Britain, being a constituent part of the United Kingdom. The area is 32,586 square miles; land area, 31,828 square miles. Population (1911 census), 4,390,219. See GREAT BRITAIN; also AGRICULTURE.

IRON AND STEEL. After two extraordinary years of industrial activity, the iron and steel industry of the United States in 1917 was operating under entirely new conditions demanded by the participation of the United States in the great European war. The production of pig iron in 1917 was estimated by the *Iron Age* at about 38,700,000 tons, against 39,435,000 tons in 1916. Lake Superior ore production was 63,960,956 tons in 1916 and 63,964,000 in 1917. The steel-ingot production in 1917 was estimated at about 42,400,000 tons, being the greatest on record, as compared with the previous record output for 1916 of 41,401,000 tons. This increase in steel ingots and the decrease in pig iron production represented the use of accumulated stocks of steel making pig iron and the larger use of scrap in the making of open hearth steel. While the coal production was greater in 1917 by some 50,000,000 of tons, nevertheless it was entirely inadequate for the iron and steel industry, and frequently blast furnaces were compelled to wait days at a time for coke, while steel works were without coal for the gas producers. On January 1, 1917, there were 311 furnaces in blast, a number that grew to 357 on September 1, 1917, but at the same time there was a decrease in the rate of pig iron production throughout the year.

The first war year for the United States steel industry was one of especial significance in that owners, manufacturers, and workmen united in the one patriotic impulse to aid the government and its Allies, to the sacrifice of commercial needs or individual profits. For this reason the year 1917 compared favorably with the previous year when American steel plants were working for maximum output to supply the demands of the world. The most significant feature of 1917 was the regulation of prices and production by the government. From the beginning of the year foreign and domestic purchasers were in competition and prices rose proportionately to undue levels. As a result the price for pig iron fluctuated during the year, reaching a high point of about $55 per ton in July and August. This condition, however, was changed by the adoption of the price fixed by the government. Preferential prices had been made to the government in April, and May, while the market generally was much higher, and there was an active demand for pig iron and other materials and products. In the latter part of April, it was found impossible to give the same prices to the Allies as to the United States, and matters continued unsettled until on July 12, President Wilson made an appeal to manufacturers in all lines of industry for a one-price-for-all policy, namely one price to the government, Allies, and the public. At this time, a committee of the American Iron and Steel Institute was conferring at Washington with the secretaries of war and navy, the chairman of the United States Shipping Board, and the chairman of the Committee on Raw Materials of the Advisory Commission of the Council of National Defense. The steel men promised to stimulate production and speed deliveries, while the matter of prices for iron and steel was to be left to the Federal Trade Commission which then had under way an inquiry into production costs. This unsettled condition affected the market and prices, while the Federal Trade Commission costs inquiry progressed but slowly, as it became far more complicated than had been anticipated by the various officials and economists concerned in the effort. For this reason, the War Industries Board entered into a conference with the Steel Manufacturers' Commission, and an agreement was reached in September so that on September 24 President Wilson was able to announce the following prices: Mesaba non-Bessemer iron ore, $5.05; Connellsville coke, $6; pig iron, $33; steel bars, 2.90c., Pittsburgh structural shapes, 3c.; and plates 3.25c.

The price for pig iron was uniform at the furnace, whether northern or southern, for No. 2 foundry basic iron, and this, as well as other prices, was a marked reduction from the rates that had prevailed in the open market. This agreement involved the application of the same prices to all purchasers whether by the government and its allies or by private consumers, thus carrying out the president's wishes. But there was comparatively little sold at the government figures, as the capacity of the mills was engaged under previous contracts which then had considerable time to run. The prices announced in the agreement were to continue to January 1, but on December 28, President Wilson announced that these prices would continue to March 31, 1918, although the investigation by the Federal Trade Commission of iron and steel costs had shown substantial advance over the original figures of costs.

With the government's programme for naval and merchant shipbuilding and munitions developed during the year, there was a great demand for increased output. In April, the government's requirements were estimated as not over 5 per cent of the steel output of the United States, but this figure was radically revised when the estimated shipbuilding in a year in American yards was increased from 1,500,000 to 6,000,000 tons, requiring about 600,000 tons of steel plates and shapes. At the end of the year it was reported that the United States government and its Allies, including manufacturers working on government contracts, would require at least 10,000,000 tons of steel. For shells alone contracts had been entered into for 1,500,000 tons of steel on which deliveries were to be completed by June 15, 1918.

Iron and steel were extensively exported during the first months of the year, although the unrestricted submarine warfare was a deterrent influence, and there was a shrinkage in tonnage in February. In the second half of the year, the government's export embargo effective July 15, also had its effect, but for ten months ended October, the exports were 5,098,000 tons, as against 4,968,000 tons in the corresponding months of 1916. The value of all iron and steel exports including machinery for the first ten months of 1917 was $1,025,623,000, as compared with $701,052,000 for corresponding months of 1916, and $294,322,000 in 1915.

Rails and railway equipment were a considerable factor in the exports of 1917, Russia, France, Italy, and Spain, taking considerable amounts. The rail exports were estimated at about 500,000 tons, while the United States government ordered 150,000 tons of rails for France. There were ordered 24,700 cars and 2000 locomotives, while the domestic orders for cars were about 50,000 and for locomotives 2150, there being also export orders for both cars and locomotives, in addition to various foreign countries.

The iron and steel industry in 1917 was marked by but few strikes, none of which seriously interfered with production. Machine shops, foundries, boiler works, and shipyards, however, suffered by strikes for higher wages and union recognition (see STRIKES), although the officers of the unions for the most part were most loyal in their support of the government and had agreed that no efforts to unionize open shops would be made during the war. The United States Steel Corporation made two 10 per cent advances in wages, and by the second of these, effective October 1, wages at steel plants were 161 per cent of the rate prevailing January 1, 1916. This was the fifth 10 per cent advance in the two years. The example of the United States Steel Corporation was followed by other purchasers. During the year Senator Pomerene introduced a bill providing for government control of iron and steel production, but this was a measure for future consideration rather than one directly affecting the industry during 1917.

An important feature of the iron and steel industry in 1917 was the demand for steel plates, especially for shipbuilding. In addition to American yards, Japan was an important customer and the government embargo threatened seriously the shipbuilding industry, as 400,000 tons of plates were still to be rolled for Japan after August. With the development of the idea of the fabricated ship (see SHIPBUILDING) the structural mills became very active, and their product also was required for various munition plants, aëroplane depots, and hangars. Rails, however, were not in active demand and were not included in the price fixing scheme for steel products.

IRON ORE. The iron ore, exclusive of that containing 5 per cent or more of manganese, mined in the United States in 1916, amounted to 75,167,672 gross tons, as compared with 55,526,490 gross tons mined in 1915, an increase of 19,641,182 gross tons, or 35 per cent. Beneficiated ore, instead of crude ore mined, is included, if the ore is treated in any way. The quantity of iron ore shipped from the mines in the United States in 1916 amounted to 77,870,553 gross tons, valued at $181,902,277, as compared with 55,493,100 gross tons, valued at $101,288,984 in 1915. This represents an increase in quantity of 22,377,453 gross tons, or 40 per cent, and in value of $80,613,293, or 80 per cent. The average price of ore per ton for the whole country in 1916 was $2.34, as compared with $1.83 in 1915. These quantities of ore, both mined and shipped, include the iron ore used for fluxing other metallic ores at smelters in the Western States, but the shipments do not include the iron ore sold for the manufacture of paint. The quantity of iron ore sold for the manufacture of paint in 1916 amounted to 16,968 gross tons, valued at $45,256, or $2.67 per ton. In Arkansas one producer shipped five tons of loadstone, averaging 70.5 per cent of metallic iron, which was sold at a high price to manufacturing druggists. The ore reported as sold for fluxing other than in the manufacture of pig iron amounted to 88,601 gross tons, valued at $288,089, in 1916, as compared with 17,213 gross tons, valued at $27,456, in 1915. The domestic iron ore actually sold for the manufacture of pig iron amounted in 1916 to 77,781,952 gross tons, valued at $181,614,188, as compared with 55,475,887 gross tons, valued at $101,261,528, in 1915.

Iron ore was mined in twenty-four States in 1916, as compared with twenty-three States in 1915, Idaho having dropped out and Iowa and West Virginia having been added as producers in 1916. Of these States, Nevada and Utah produced ores for fluxing only; part of the production of Colorado and New Mexico was for smelter flux and part for pig iron and ferroalloys. Michigan and Minnesota report some ore used in open-hearth steel furnaces to "reduce carbon," and North Carolina reports magnetite ore used in puddling furnaces at Knoxville, Tenn. The remaining States produced iron ore for blast-furnace use only, except small quantities for paint from Michigan, New York, and Wisconsin. The rank of the three States producing the largest quantity of iron ore—Minnesota, Michigan, Alabama—remained unchanged in 1916.

The Minnesota iron ranges produced more iron ore than all the rest of the States together, having furnished nearly 60 per cent of the total of the United States in 1916, as well as in 1915. The Lake Superior district, comprising all the mines in Minnesota and Michigan and those in northern Wisconsin, mined nearly 85 per cent of the total production, as compared with 45,944,254 gross tons, or 85 per cent, in 1915.

Hematite has always been predominant as an ore of iron, and in 1916 it constituted more than 94 per cent of the iron ore mined in the United States. Brown ore and magnetite are far below it in importance, having together furnished in 1916 less than 6 per cent of the total production of iron ore. The production of iron carbonate is insignificant in comparison with that of the other ores; in 1916 it constituted only about 0.002 per cent of the total.

In 1916 there were 405 iron ore mines active, compared with 340 in 1915, and 222 mines in 1916 produced more than 50,000 gross tons of iron ore each, compared with 184 mines in 1915. Of these 222 mines, twelve produced more than 1,000,000 tons of iron ore each in 1916, five more than in 1915. First place in 1916 was held by the Hull-Rust mine, at Hibbing, Minn.;

second place by the Red Mountain group, near Bessemer, Ala.; third place by the Fayal, at Eveleth, Minn.; and fourth by the Mahoning, at Hibbing, Minn. The production of these mines in 1916 was, respectively, 7,658,201 tons, 2,899,588 tons, 2,252,008 tons, and 2,215,788 tons, compared with 2,307,195 tons, 2,138,015 tons, 871.364 tons, and 2,311,940 tons, respectively, in 1915. The increase in production of the Fayal is noteworthy—more than 158 per cent. The Mahoning was the largest producer in 1915. Eight of the twelve mines producing more than 1,000,000 tons in 1916 are in Minnesota. The largest producer in Michigan in 1916 was the Norrie group, which reported having mined 1,566,566 gross tons of hematite, a considerable increase over the production in 1915, which was 897,484 tons.

The iron ore mined in the United States in 1917 amounted to about 75,324,200 tons. The shipments from the mines are estimated at 75,647,000 gross tons, valued at $236,178,000, a decrease of about 3 per cent in quantity, but an increase of 30 per cent in value over 1916. About 85 per cent of the ore mined during the year came as usual from the Lake Superior district. From the mines in the South there were shipped about 8,000,000 tons, the bulk of which came from the Birmingham district in Alabama, and the remainder from the mines in Georgia, Tennessee, North Carolina, and Virginia. New Jersey, New York, and Pennsylvania increased their production slightly as compared with 1916. The following table shows the ore mined in 1916-17 in the chief iron-producing States.

	Ore mined (gross tons)	
District	*1916 (Actual)*	*1917 (Estimated)*
Lake Superior:		
Michigan	18,071,016	17,709,000
Minnesota	44,585,422	45,058,000
Wisconsin	1,304,518	1,202,000
Total	63,960,956	63,964,000
Southeastern States:		
Alabama	6,747,901	6,707,000
Georgia	256,949	318,000
North Carolina Tennessee	520,140	616,000
Virginia	440,492	471,000
Total	7,965,482	8,112,000
Northeastern States:		
New Jersey	493,004	501,000
New York	1,342,507	1,365,000
Pennsylvania	559,431	574,000
Total	2,394,942	2,440,000
Western States:		
Colorado New Mexico Wyoming	717,660	666,000
Other States	128,632	142,000
Grand total	75,167,672	75,324,000

Imports and Exports. The quantity of iron ore imported into the United States in 1916 was 1,325,736 gross tons, valued at $4,566,514, of $3.44 a ton. This represents a decrease in quantity of 15,545 tons, or 1.2 per cent, and an increase in value of $384,869 or 9.2 per cent, as compared with the imports during 1915, which were 1.341,281 gross tons, valued at $4,181,645, or $3.12 a ton. As to the source of the imports in 1916, Cuba produced approximately 54 per cent of the ore, Sweden 16 per cent, Spain 12 per cent, Canada 10 per cent, Chile 5 per cent, and minor quantities came from French Africa and the United Kingdom. Supplies from Germany and Belgium were wholly interrupted in 1915 and 1916 by war, and almost wholly from the United Kingdom, and it is probable that the imports from Newfoundland, which diminished greatly in 1914 and ceased altogether in 1915 and 1916, have been diverted to England and in part used at home. Supplies from Canada, however, increased in volume in 1916, largely from the Canadian ranges in the Lake Superior region.

The quantity of iron ore exported from the United States in 1916 amounted to 1,183,952 gross tons, valued at $3,702,496, or $3.13 a ton, as compared with 707,641 gross tons, valued at $2,181,629, or $3.08 a ton, in 1915. This represents an increase in quantity of 476,311 tons, or 67 per cent, and in value of $1,520,867, or 70 per cent. The greater part of the ore was exported to Canada, it is understood, for the manufacture of iron and steel at plants in Ontario. Nearly as much ore was exported to Canada in 1916 as was imported into the United States from all sources.

PIG IRON. The production in 1916 of all kinds of pig iron, including such ferroalloys as spiegeleisen, ferromanganese, ferrosilicon, and ferrophosphorus, produced in blast furnaces, as well as some that were electrically produced, was 39,434,797 gross tons, compared with 29,916,213 tons produced in 1915, an increase of 9,518,584 tons or 32 per cent. The following table gives the total production in gross tons of pig iron in 1915 and 1916, by States, according to their rank each year:

PIG IRON, INCLUDING SOME FERROALLOYS, MANUFACTURED IN THE UNITED STATES IN 1915 AND 1916, IN GROSS TONS [a]

State	*1915*	*1916*
Pennsylvania	12,790,668	16,506,284
Ohio	6,912,962	8,602,895
Illinois	2,447,220	3,922,512
New York New Jersey	2,104,780	2,352,535
Alabama	2,049,453	2,762,885
Indiana Michigan	1,986,778	2,221,708
Wisconsin Minnesota	372,966	811,325
West Virginia Kentucky	291,040	554,590
Missouri Iowa [b] Colorado Washington California	271,921	437,633
Maryland	251,548	501,452
Virginia	251,346	399,885
Tennessee	177,729	355,374
Connecticut Massachusetts	7,802	5,719
	29,916,213	39,434,797

[a] Bureau of Statistics of the American Iron and Steel Institute.

[b] Ferrosilicon produced in electric furnace for first time in 1916.

According to reports by the manufacturers, the shipments of pig iron, exclusive of ferroalloys, in 1916, amounted to 39,126,324 gross tons, valued f. o. b. at the furnaces at $663,478,118, as compared with 30,384,486 tons, valued at $401,409,604 in 1915, an increase in quantity of 8,741,838 tons, or 29 per cent, and in value of $262,068,514, or 65 per cent. The average price per ton in 1916 was $16.96, and in 1915 $13.21, an increase in 1916 of $3.75 a ton or 28 per cent. These values represent the approximate price per ton f. o. b. at the furnaces; this approximate price eliminates freight costs, selling commissions, and other items, which are included in the market prices of certain grades of pig iron as published in the trade journals.

The pig iron shipped includes the metal produced from foreign as well as from domestic ore. The quantity and value of pig iron derived from ore imported from Africa, Canada, Chile, Cuba, Nova Scotia, Spain, and Sweden, although it constitutes a very small percentage of the total production, is considerable, as the shipments derived from foreign ore in 1916 are calculated to amount to 764,850 gross tons, valued at $15,996,756, as compared with 945,022 tons valued at $13,011,950, in 1915. In the manufacture in 1916 of 727,550 gross tons of pig iron, 1,295,518 gross tons of foreign iron ore were reported to have been used, thus indicating an average pig-iron yield of 56.16 per cent, as compared with the quantity of imported ore. Domestic ore including 4,036,022 tons of cinder, scale, scrap, etc., and amounting to 74,805,256 gross tons, was reported in 1916 as used in the manufacture of 37,974,413 tons of pig iron, thus indicating a yield of 50.76 per cent in pig iron from the domestic materials.

PIG IRON SHIPPED FROM BLAST FURNACES IN THE UNITED STATES IN 1915 AND 1916

	1915		*1916*		*Increase in 1916*		*Percentage of increase in 1916*	
State	*Quantity (gross tons)*	*Value*	*Quantity (gross tons)*	*Value*	*Quantity (gross tons)*	*Value*	*Quantity*	*Value*
Alabama	2,820,255	$23,757,124	2,672,498	$38,994,660	852,243	$15,237,536	15	64
Illinois	2,455,894	34,207,901	3,857,891	67,764,309	1,401,497	33,556,408	57	98
Kentucky	105,700	1,420,275	144,444	2,595,600	38,744	1,175,325	37	83
Michigan	486,106	6,624,559	505,646	8,851,361	19,540	2,226,802	4	34
New York	2,010,076	28,178,466	2,289,608	40,527,240	279,532	12,358,774	14	44
Ohio	6,995,000	90,549,626	8,689,030	136,855,228	1,694,030	46,305,602	24	51
Pennsylvania ..	12,779,974	174,926,891	16,351,131	293,437,782	3,571,157	118,510,891	28	68
Tennessee	208,298	2,519,337	329,342	4,981,538	121,044	2,462,201	58	98
Virginia	265,616	3,408,784	444,491	7,140,002	178,875	3,731,218	67	109
Wisconsin	302,913	3,997,940	423,973	7,534,327	121,060	3,536,387	40	88
Other States *a*..	2,454,654	31,818,701	3,418,770	54,786,071	964,116	22,967,370	39	72
	30,384,486	401,409,604	39,126,824	663,478,118	8,741,838	262,068,514	29	65

a 1915: Colorado, Connecticut, Indiana, Maryland, Massachusetts, Minnesota, Missouri, New Jersey, and West Virginia; 1916: California, Colorado, Connecticut, Indiana, Maryland, Massachusetts, Minnesota, Missouri, New Jersey, and West Virginia.

The number of blast furnaces in operation on December 31, 1916, were 333. Of these, 127 were in Pennsylvania. The imports of pig iron in 1915 amounted to 89,836 gross tons, compared with 135,349 in 1916, a decrease of 51 per cent. The largest amount came from the United Kingdom. There were exported in 1916 607,236 gross tons, an increase of 170 per cent over the exports of 1915. The largest quantity was sent to Italy.

STEEL. The production of steel in the United States in 1916 amounted to 11,059,039 tons of ingots and castings of open hearth steel. The production of steel by the electric process amounted to 168,918 gross tons. The manufactured iron and steel imports into the United States in 1916 amounted to 187,010 gross tons, valued at $6,837,603. There were exported 5,493,898 gross tons, valued at $338,589,607, compared with 3,308,097 gross tons, valued at $137,347,782, in 1915.

See CHEMISTRY, INDUSTRIAL.

IRRIGATION. The year 1917 witnessed little activity in new irrigation development anywhere in the world. This condition can be attributed principally to the war which involves most of the nations which engage in such work in normal times. The great demand for increased food production, however, caused some revival in such work. The progress of the year in different parts of the world is summarized below.

UNITED STATES. The great effort made by the Federal government and the several States to increase food production has stimulated to some extent the reclamation of agricultural lands by irrigation. Speaking generally, this resulted in a fuller utilization of the works already built rather than the construction of new works, although there was some new construction. There are large unused areas in both private and government irrigation projects, and Federal and State officials urged the use of these lands as an emergency measure, rather than new construction. In accordance with these suggestions the United States Reclamation Service gave specially liberal terms for water users in 1917 and farmed some of its own lands; and in his annual report the secretary of the interior asks for a considerable appropriation to be used in 1918 in farming public lands, mostly under irrigation. Along the same line, the State of California enacted a law permitting mutual water companies and irrigation districts to supply water to lands outside their projects without becoming public utilities, i. e., without obligating themselves to continue such service. There was much discussion of farming by public agencies, but aside from that mentioned little was done.

The legislatures of most of the western States met in 1917 and considerable legislation relating to irrigation was enacted. The United States Reclamation Service adopted the policy of urging the organization of irrigation districts to take over their projects and replace existing water users' associations, and to this end drafted amendments to State irrigation district laws providing for such action and secured their adoption in Arizona, California, Colorado, Idaho, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, and Washington. A law making Federal lands within the boundaries of irrigation districts organized under State laws subject to district taxes was passed by Congress as a supplement to the State district laws. Other irrigation district legislation included an amendment to the California law giving the State water commission supervision over the expenditures of irrigation districts whose bonds had been approved by the State; an amendment to the Idaho law authorizing districts to sell State lands within districts for delinquent taxes; a new district law in Oregon that provided for field examinations of proposed irrigation districts by the State engineer, an examination of the general feasibility of the districts by a commission composed of the attorney-general, the State engineer, and the superintendent of banks, and the approval of district bonds by this commission up to half the value of the property covered; and a new district law in Utah that authorized the governor to propose the organization of districts upon the suggestion of the State engineer, and for the making of surveys for such districts by the State engineer.

Other important legislation included an amendment to the Texas law permitting the State board of water engineers to adjudicate water rights; a revision of the procedure for the adjudication of water rights by the State water commission of California; and the enactment of a new law providing for public control of irrigation in Washington. The enactment of this law by the State of Washington was the culmination of years of effort to this end. The law created the office of State hydraulic engineer, provided for the adjudication of existing rights to water, the acquisition of rights under public supervision, and the distribution of water by public officials. Utah in 1917 created an irrigation commission which was to draft irrigation laws for presentation to the legislature in 1919.

Rights to water from interstate streams received considerable attention from legislatures and courts. California enacted a law prohibiting the State water commission from granting rights for water to be used in another State unless the other State permits the diversion of water therein for use in California, and Colorado made it unlawful to divert water in that State for use in another State. A suit regarding the use of water from the North Platte River in Colorado and Wyoming, which had been pending for several years, was argued before the Supreme Court of the United States, but the court ordered a reargument.

The annual report of the United States Reclamation Service for the year ended June 30, 1917, showed total estimated receipts from the sale of public lands credited to the Reclamation Fund amounting to $93,190,082.85. To this should be added a special appropriation of $1,000,000 for the Rio Grande project and a $20,000,000 bond loan fund, making a total fund of $114,190,082.85. The gross revenue earned to June 30, 1917, was $7,252,315.51, and the gross expenditures for construction were $123,037,579.02. The total area included in the reclamation projects is 3,182,695 acres, to 1,797,811 acres of which the service was ready to supply water in 1917. The area covered by water right applications and rental agreements—that is, the area for which the land owners had entered into agreements of some kind to pay for water—was 1,375,939 acres, and the acreage to which water was supplied in 1917 was about 1,200,000 acres, an increase of about 300,000 acres over the acreage supplied in 1916. This was the largest increase shown in any single year since the organization of the service, and was due, to some extent, to the emergency calls for increased crop production. The figures given show that the service was prepared to supply water to about 600,000 acres more than was irrigated in 1917.

Operations under the Carey Act (Act of August 18, 1894, granting desert lands to the States on condition that the States provide for its reclamation) were small during the year 1917, as in several years previous. During the year ended June 30, 1917, the areas applied for under this law aggregated but 6,116.32 acres, and the area patented to settlers was 42,063.55 acres. The total area segregated to the States under this law from the date of its passage to June 30, 1917, was 3,711,614.56 acres, and the area patented was 803,518.85 acres.

Among the larger enterprises not under Federal laws were the Kings River project in California, which contemplated the storage of the flow of Kings River, the supplying of water to existing canals as well as to new ones, the development of electric power, and pumping from wells for irrigation as well as drainage, the whole area affected being about 1,000,000 acres; an all-American canal taking water from the Colorado River at the Laguna dam of the United States Reclamation Service and supplying water to about 150,000 acres adjoining the Imperial Irrigation District in California; and the Horse Heaven Irrigation District in Washington, which includes about 300,000 acres. A noteworthy development which does not involve a large area but marks the rise of a new industry, is the development of rice growing in the interior valleys of California, the area irrigated having reached about 80,000 acres in 1917. See DAMS; DRAINAGE.

OTHER COUNTRIES. Irrigation development in western Canada in 1917 consisted in the fuller utilization of works already built. No new projects of any magnitude had been begun. The unsettled conditions in Mexico prevented the carrying out of large schemes for irrigation development in that country. In Central and South America there was more activity. A dry season in Honduras caused consideration of irrigation and it was estimated that 700,000 acres could be brought under irrigation at a reasonable cost. The Colombian government provided for experiments in irrigation and for the putting down of artesian wells. The government of Peru authorized its president to arrange for the completion of irrigation works already begun ad also for new projects. Chile was planning and executing several large projects that would provide for the reclamation of some 300,000 acres.

In the Eastern Hemisphere there was little expansion. The Egyptian and Indian governments were operating their works previously built but were making little or no extensions. An exception to this was the work on the Blue Nile above Khartum, where a large area of cotton soil was being reclaimed. It was estimated that from 300,000 to 500,000 acres could be reclaimed in this section without injury to the water supply of lower Egypt. The government of Siam was proceeding with its projects begun in 1916, and the States of Australia were going on with their projects in a limited way. Everywhere, however, the world war was delaying or hindering entirely large reclamation works.

ISOSTASY. See GEOLOGY.

ISTRIA. A crownland and titular margravate of Austria. It consists chiefly of a peninsula extending from Trieste and Carniola into the Adriatic Sea. Its area is 1914 square miles, or somewhat less than that of Delaware. The population according to the census of December 31, 1910, was 403,566, as compared with 345,050 in 1900. In 1910 the number of Austrian subjects was 386,463; of these, Croatian was the vernacular of 168,184 (43.52 per cent); Italian, 147,417 (38.15 per cent); German, 12,735 (3.30 per cent). Of the population in 1910, Catholics numbered 400,170 (99.16 per cent); Orthodox, 1050; Evangelicals, 1493; Jews, 677. About 61 per cent of the inhabitants were dependent on agriculture. The capital is the seaport Capodistria; its population in 1910 was about 9000, that of the commune about 12,000. Istria has a unicarmel diet of 47 members and is represented in the Austrian Reichsrat by six members.

Pola, the great Austrian naval base, is situated near the extremity of the Istrian peninsula, 85 miles by rail southwest of Trieste and almost due east of Venice, 75 miles across the Adriatic. It had 58,562 inhabitants at the 1910 census, commune about 71,000. The following is taken from a bulletin of the National Geographic Society, issued in September, 1917:

"Pola's sole important activity before the war was connected with the repairing, provisioning, and harboring of the Austrian naval forces. The town is virtually without industrial establishments or manufactures. The practically land-locked harbor is divided, the upper or northern half being the commercial roadstead, and the lower half (below the chain bridge which connects Scoglio Olivi, or Olive Island, with the mainland) being the Porto Militare, with the extensive marine arsenal on the southeastern shore. The city itself clusters around a castle-crowned hill which was once the site of the Roman capitol. The castle is a memento of the days of Venetian prowess. Before the war Pola was annually visited by many American and English tourists, not on account of its strongly fortified harbor but because of the interesting and well-preserved monuments which have survived since the days of Roman occupation.

"The most impressive ruin in Pola is the vast amphitheatre, erected at the beginning of the Christian era in honor of the Emperors Septimius Severus and Caracalla. This is believed to be the only Roman amphitheatre whose outer walls have withstood the ravages of time and of man. The interior, however, is badly dismantled and the foundation walls at one end, centuries ago, were extensively quarried by the Venetians who desired the white Istrian limestone for the erection of their own palaces. More than 20,000 spectators used to watch the naval and gladiatorial combats in this arena. On the upper tier are still to be seen the stone sockets which supported the awnings used in sunny weather. The temple of Augustus, erected in 19 B. C. is another monument of antiquity which is remarkably well preserved.

"About the middle of the 12th century Pola became a Venetian city. In the destructive wars which resulted from the rivalry between Venice and Genoa to control the commerce of the world two centuries later this port across the Adriatic suffered often and grievously. It was completely destroyed in 1379, and for nearly four and a half centuries it lay dormant. It passed to Austria at the end of the Napoleonic wars, however, and its modern growth dates from 1848, when it was selected as an Austrian naval base."

ITALIAN LITERATURE. Among the names which have annually appeared in these YEAR BOOK reviews is that of Virgilio Brocchi, whose first volume, *Le aquile*, goes back to 1906 and the second, *La Gironda*, to 1909. Since 1911, Brocchi's activity has been more pronounced. We have had in rapid succession, *L'Isola sonante*, which won the prize in the Rovetta novelistic competition in 1911, two volumes of tales, *I sentieri della vita* and *La coda del diavolo*, and three novels, *Il labirinto*, *Le ombre del vespero*, and *Il fascino*. The year 1917 shows two new works of this prolific romancier: *La bottega degli scandali* and *Mitì*. We may say that Brocchi's "specialty" is the psychology of the Italian priest, a field which he exploits with the mystic idealism of Fogazzaro in mind, on the one hand, and the radicalism of Zola, on the other. There was a vigorous conception behind the early *Isola sonante* (The Village of Church Bells): the characters of two priests set in contrast through their reactions, first, to a celibacy uncongenial to both their temperaments, and second, to the vicissitudes of the bitter industrial and social strife that presented itself in Italy before the great war in such peculiar combinations of interest and feeling. In this work, for all of its many noteworthy virtues, the author was clearly not fully conscious either of the exact artistic scope of his subject or of his own special gifts. His spirit was not wholly subjugated to the deep, rich sentimentality of Fogazzaro; nor did it possess a comprehensive vision of Zola's humanitarianism. Between these two motives, each full of artistic possibility, the author's mind flitted with a sort of bantering neutrality. There was never the ring of a moving conviction. This vagueness of outlook on life had its reflections also in the author's technique: everything appeared to him in the same proportion. He was equally interested in all his characters. There was, in consequence, a constant shifting of interest with a general incompleteness of finish. In short, we had here delineated an effort in the "grand style"—the portrayal of a complete character in an environment of some magnitude, the effort failing of full realization because the author had a much clearer intuition of the environment as a whole than he had of any specific character. *La bottega degli scandali* amounts almost to a reworking of this earlier theme, reduced to more modest but more exact and natural proportions. Here we have frankly the study of an environment, rural and clerical, but shot through with socialistic propaganda. On it the tiny characters project themselves in sharp and unpretentious outlines; abandoning the aspiration to the higher pinnacles of feeling, Brocchi works gracefully and incisively in this field of satiric humor. He seems distinctly to have found himself, and is now in full control of a fertile imagination the productions of which were always worth reading.

Italy has in general made little use of the war-cries of democratic humanitarianism that have been raised in America and to a certain extent in England. The Italian war-spirit in Italy has been fed on the phraseology and on the memories of middle nineteenth century nationalism. One notes accordingly few attempts at forecast of the new civic consciousness which, it is felt more or less vaguely, the war will produce. We may cite in point *Il titano* of Dario Niccodemi. Here the dishonest profiteer is contrasted with a "Titan" of the old plutocratic morality. The former manipulator of millions gives his entire family to the war, and returns, himself wounded, to find ruin and disgrace in possession of the remnants of his household. He is now obsessed and exalted by the "deep, imperious, invincible, necessity of being better" in a world that is to be "more just, more generous, more merciful." Paying his legal debts and his debts of honor to the last penny, he exemplifies that conviction by surrendering his vast dreams of capitalistic reconstruction to take an obscure position as cashier in the ministry. Giacosa would have said as much thirty years ago. Niccodemi's plays grow yearly more numerous but not more deep. He is still working the Ibsenesque formula through various combinations of the Latin marriage problem. Another manifestation of the maternal instinct is treated in *La nemica*. It is unimportant that the hero be a legitimized heir. The virtual stepmother hates him as the usurper of her own son's property and standing, and also out of a suppressed jealousy at his unquestionable superiority, morally and intellectually, over her own offspring. The boy's mystic affection for the woman he regards as his real mother is finally rewarded by her spiritual adoption of him, when war brings death to her own son. These two new plays bring Niccodemi's productions to seven: *L'aigrette*, *Il rifugio*, *I. Pescioani*, *L'Ombra*, and *Scampolo* are the others. These works show Niccodemi as a "feminist" of the Bracco type. His heroines are super-women, who display abnormal volition in living up to the ideals of Latin morality. They never dream, nor does Niccodemi ever dream, of subjecting to criticism those ideals themselves. We have here a series of heroic automatons moving in a world, naïve, superficial, and corrupt. The author's technical brilliancy can hardly overcome this fundamental poverty of vision. Of the lot, *Il rifugio*, because the most complex, remains still the best.

Ada Negri, justly celebrated as the author of five volumes of exquisite verse (*Fatalità*, *Tempeste*, *Maternità*, *Dal profondo*, *Esilio*), now publishes a collection of tales, *Le solitarie*, which she describes as "fading perspectives of the lives of women, left alone to fight the battle of life, deserted in spite of family, in spite of love, solitary through faults of their own, of mankind, or of fortune." They are in fact complete biographies of humble types—one suspects even as in *Anima bianca* (The Spotless Soul) a not infrequent autobiographical touch. Distinctive in all of Ada Negri's work is the note of social protest which transforms to some extent the pathos prevalent in most contemporary Italian literature—precisely to what extent is an interesting and difficult question; for if Ada Negri is rebellious against the cruelties of society, she is equally rebellious and equally helpless before the cruelties of Nature.

Of quite unusual excellence are the new tales of Francesco Pastonchi, *Le trasfigurazioni*, many of which (e. g., *Sono venuti*, *Le scarpe nuove*) are original in conception, rapid in movement, and of the most varied tones. The strongest effects spring from the happy unconsciousness of child-life thrown out upon the horror of the war background. Nothing meanwhile disturbs the serenity of Pastonchi's contemplative æstheticism. As he gave pictures of life before the war, so he gives now pictures of life during the war, mechanically beating the path of the traditional Italian ideology. "First of all," says his crutch-maker, "they are Christians and are resigned, and to live in this world, everybody, everybody must be resigned." Whereas a more self-conscious criticism of life appears in *E domani, lunedì* of Luigi Pirandello, eighteen tales illustrating more or less organically the identity of reality and illusion: "Look at them, measure them, spy on them, it is useless. One never knows which of the two is mad, which one is in the clutch of a fancy, which possesses reality itself." We arrive through this pessimistic agnosticism at the aphorisms of Epictetus: life is what we think it is; sorrows and joys alike are such only as far as we choose so to regard them. The temper of these tales is, however, rather destructive than positive. There is, especially in *Il signore della Nave* and *All' uscita* (As They Leave the Tomb), something of the sarcastic manner of Leopardi's prose. It is to be remembered that Pirandello, born in 1867, is in his full maturity. These new things are perfect specimens of his best style, that has won him recognition as the Maupassant of Italy. *Il maleficio occulto* of Luciano Zuccoli is a revised edition of an immensely clever detective story published in 1903. Zuccoli's world is stiffly aristocratic. Its subtler conventions, preconceptions, prejudices, he portrays with a touch light but sure. His best figures are elegant men of the world whose psychology he likes to set off against the preoccupations and manners of less favored social classes. In this latter respect he has done nothing better than *Farfui*, though some of his novelettes contain very interesting portraits of adolescent girls. Of the "twenty-four brains" dissected by Giovanni Papini in *24 cervelli*, Walt Whitman is one: "I must confess," says Papini, "that I, a Tuscan and a Latin, first grasped the meaning of poetry, not in Virgil or Dante, much less in Petrarch or Tasso, but in the childish enumerations, the long, passionate invocations of the kindly scythesman who gathered the *Leaves of Grass*."

In the general field of publications, writings on political and social science show an increasing predominance. Commemorative writings also are numerous, noteworthy here those dedicated to Giacomo Venezian, Renato Serra, Scipio Slapater (critic of Ibsen and poet) and Riccardo Pitteri (of Trieste), all writers killed in action. In poetry the legends are growing around the martyrs executed by Austria: Nazario, Sauro, and Battisti, of course, but no less, Fabio Filzi, Francesco Rismondo, and Damiano Chiesa.

Other Works: *Verse*, Giuseppe Liparini, *Le foglie dell'alloro;* A. D. Sindonal, *Costellazioni;* Vito D. Palumbo, *Le Leuchesi;* Mario

Montesi, *Voci dell'anima;* Eugenio Alberti, *Rimpianto amaro;* Spartaco Muratti, *Per Riccardo Pitteri, per la mia casa, per Nazario Sauro.* *Novels*: Francesco Sapori, *La trincea;* Luisa Tocci Zaccaria, *Io penso così;* Rosso di San Secondo, *La fuga,* and *Virgilio Gracchi, maestro d'armi;* Salvatore Farina, *Dal meriggio al tramonto* (important posthumous recollections, autobiographical); Lucio d'Ambra, *Il re, le torri, gli alfieri;* Anna Franchi, *Il figlio alla guerra;* Teresah, *La casa al sole;* Neera, *Crepuscoli della libertà;* Marino Moretti, *La bandiera alla finestra.* *Theatre*: L. Pirandello, *Liolà;* Angelo Ragghianti, *L'anno mille.*

ITALIAN SOMALILAND. An Italian colony and protectorate in eastern Africa, bordering the coast of the Indian Ocean from the (British) Somaliland Protectorate southward to the Juba River. Estimated area, 357,000 square kilometres (about 137,800 square miles). Estimated population, 300,000. In 1915-16 imports were valued at 6,828,463 lire, and exports at 3,429,965. For 1916-17 the estimated revenue was 7,454,000 (local, 1,300,000, state contribution, 4,629,000, extraordinary, 1,525,000); estimated expenditure, 7,360,800 lire (including 1,787,000 extraordinary). The dependency is administered by a governor, resident at Mogadiscio.

ITALY. A kingdom in the south of Europe, consisting of a peninsula, the large islands of Sicily and Sardinia, the island of Elba, and about sixty-six minor islands. It is situated between lat. 36° 38′ 30″—46° 40′ 30″ N. and long. 6° 30′—18° 30′ E. The coast-line of the mainland is estimated at 1999 miles; of Sicily, Sardinia, and Elba at 1389 miles; of the minor islands at 557 miles; in all, 3945 miles; having several large bays and gulfs. The chief rivers are the Po, the Adige, the Tiber, and the Arno. The principal towns are Rome, the capital (570,960), Naples (697,917), Milan (663,059), Turin, Palermo, Genoa, Florence, Bologna, Venice, Catania, Leghorn, Ferrara, Padua; while there are over twenty other towns with more than 50,000 inhabitants.

Area, Population, etc. According to the calculations of the Military Geographical Institute, the total area and the population as taken at the census of June 10, 1911, compared with the estimate of January 1, 1915, were: Area, 286,682 sq. km. (110,688 sq. mi.); pop., 1911, 34,671,337; 1915, 36,120,118. The details are given in the preceding Year Book.

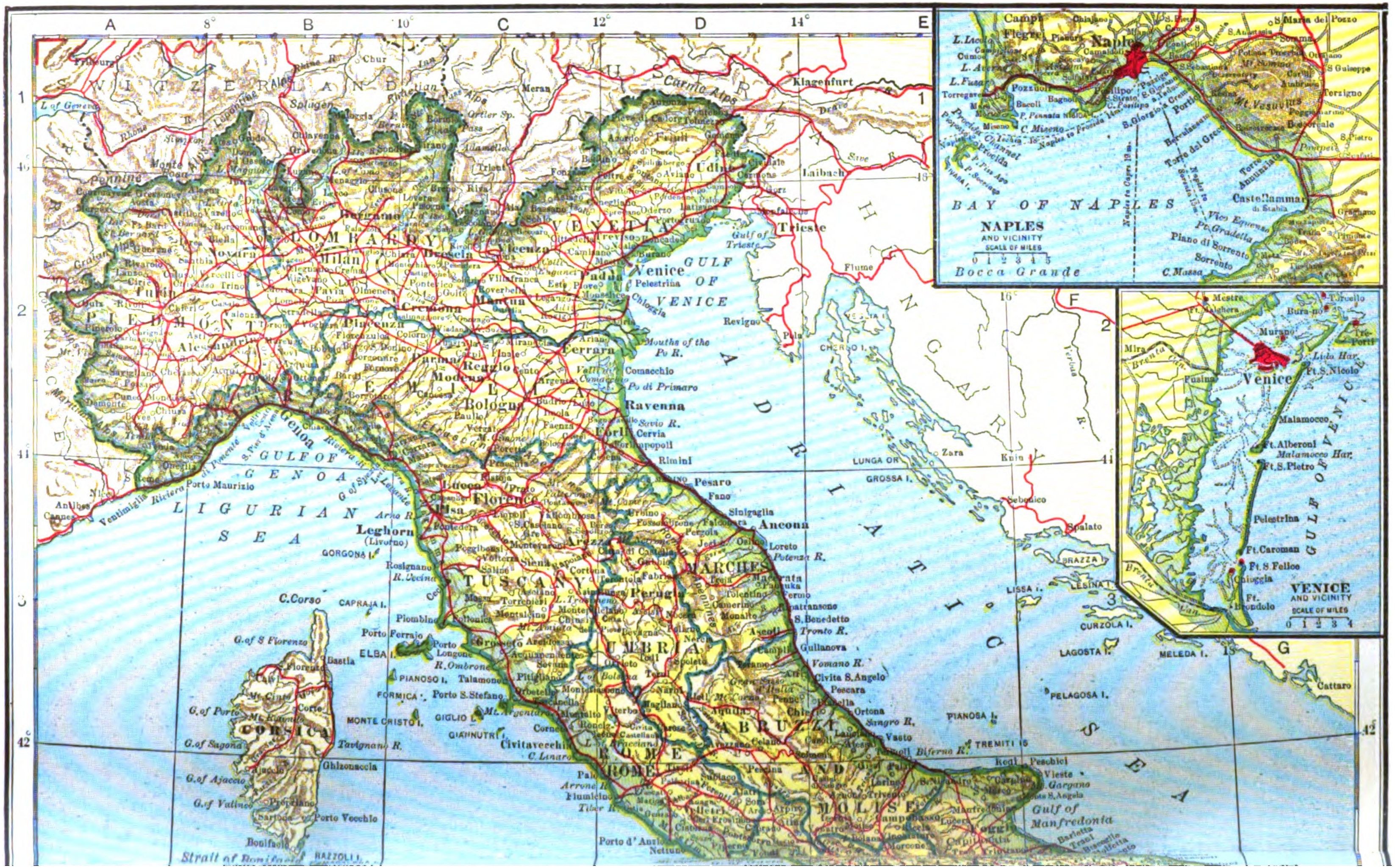
The territory in the hands of the Germans at the end of the year included all northeastern Italy to the line of the Piave River. The official proclamation issued to the inhabitants of the conquered territory provided for obligatory labor on the part of all men, women, and children over fifteen, seven days a week, from 4 A. M. to 8 P. M.; laggards to be driven to work and after harvest to suffer bread-and-water imprisonment; children to be beaten to make them work when necessary; recalcitrant workmen to be flogged. Venice had been evacuated by the greater part of its population, and the inhabitants who, in January, 1915, numbered over 168,000, had been reduced to 20,000; its palaces and museums had been stripped of their works of art, and the bronze horses of St. Mark had again started on their travels.

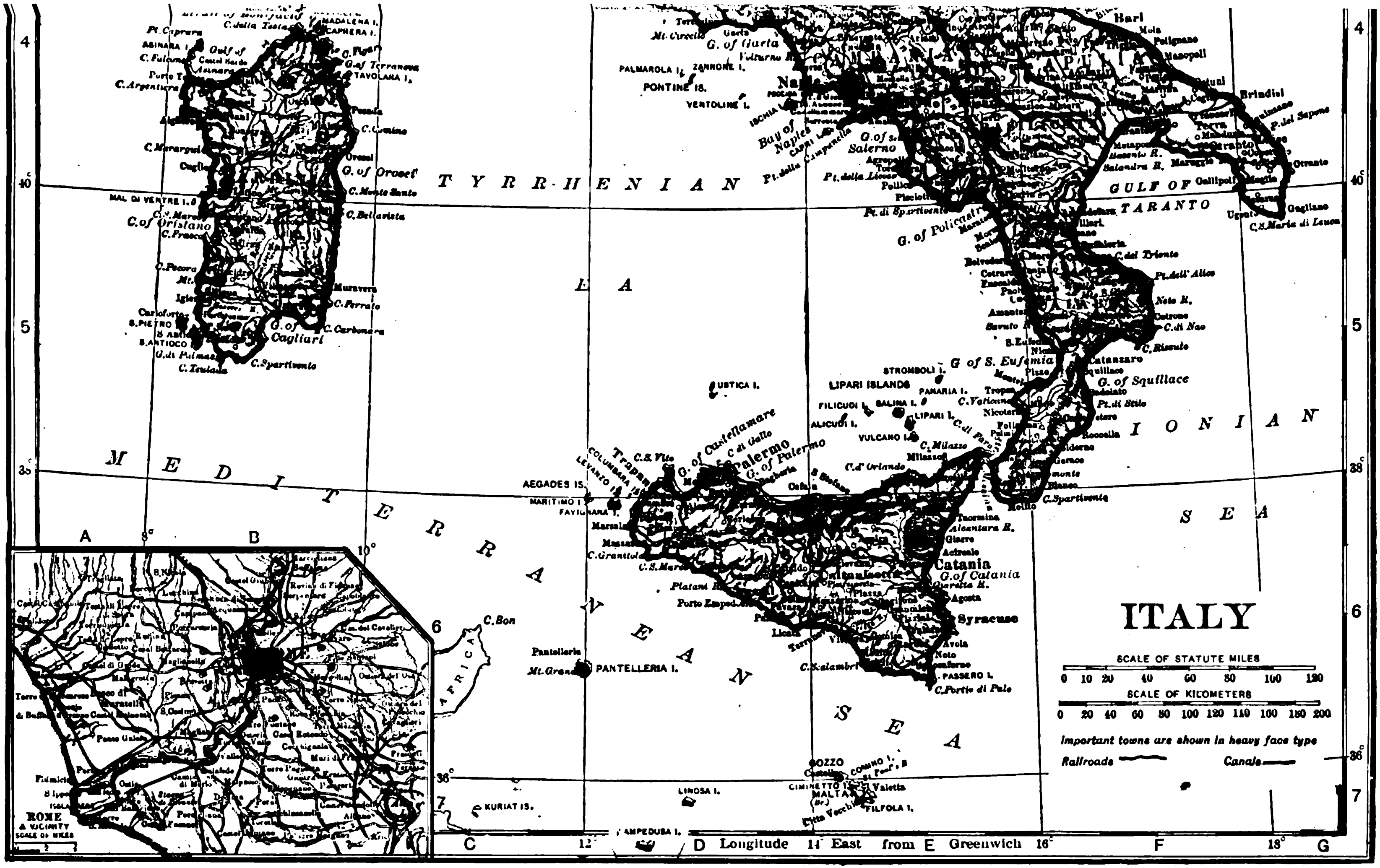
Religion and Education. The Roman Catholic is the nominal state religion, and the religion of the majority of the people; but the government has passed many acts so framed as to make the civil government supreme, and to secure complete freedom for all creeds. The officials of the church are appointed by the Pope, but the royal assent is necessary in the case either of a bishop or an archbishop. Elementary education is compulsory between the ages of six and nine (or six and twelve in some communes where facilities exist) in all parts of the country, but the law is not rigorously enforced. Religious instruction must be given to those children whose parents desire it. Secondary and higher instruction is also provided by the state, and there are twenty-one universities.

Economic Conditions. In order to facilitate the operation of loans intended to encourage production of cereals, vegetables, and root crops, a decree of the lieutenant general of the kingdom, published in the *Gazetta ufficiale* on June 30, 1917, enacts that loans of an aggregate maximum of twenty million lire may be granted to agricultural credit associations. The interest to be paid by these associations is fixed at the rate of three per cent. Decrees of the ministers of agriculture and of finance acting in concert will determine in each case the amount of the loans to be allotted to individual agricultural associations. Extracts from the report of the commercial representative of the National City Bank of Milan are pertinent:

"The attention of Italy is now turned to the United States for assistance in the vital question of coal supply. The coal situation here is very grave, despite drastic measures in eliminating all unnecessary fuel-consuming industries, reduction of train schedules, and the practical abolition of the open market for coal. Important industrial establishments are burning lignite, peat, and wood at prices which seem fabulous in comparison with those of a year ago.

"The Minister of Agriculture has published a decree tending to increase the production of cereals. Briefly, the following are the principal points: The minimum price of wheat is increased to 45 lire per 100 kilos (220 lbs.). Farmers may obligate themselves to cultivate wheat, or other cereals, vegetables, and potatoes, with the right to sell to the state all excess production over the average at a price not to exceed 10 per cent over the established minimum. The government will give facilities of credit, labor, and machinery to such farmers. On the other hand, the government has the right to oblige farmers to increase the amount of cultivated land at their disposal and to determine the kind of crop. Further concessions are made to tenant farmers regarding the right to postpone payment of rent in case of unfavorable crops. A factor which has retarded agricultural progress in Italy is the system of taxation upon production, which penalizes exceptional industry and intensive farming. However, these conditions are now appreciated through stress of necessity and past evils must be remedied. The most hopeful feature in Italian agricultural life is the gradual welding of the different agrarian associations, centralization of direction, distribution of resources, and a healthy spirit of coöperation for the common good. There is a scarcity of agricultural machinery and implements and even more so of labor, but the government is now practicing a system of sending militarized farm hands and prisoners of war to perform the heavy work. Grain stocks are to


NAPLES
AND VICINITY
SCALE OF MILES
0 1 2 3 4 5
BAY OF NAPLES
Bocca Grande
Naples
Campi Flegrei
Pozzuoli
Baia
Bacoli
C. Miseno
Procida
Mt. Vesuvius
Torre del Greco
Torre Annunziata
Castellammare di Stabia
Vico Equense
Piano di Sorrento
Sorrento
C. Massa
Pompeii
Naples to Capri 19m.
Naples to Sorrento 15m.
VENICE
AND VICINITY
SCALE OF MILES
0 1 2 3 4
Venice
Mestre
Murano
Burano
Lido Har.
Ft. S. Nicolo
Malamocco
Ft. Alberoni
Malamocco Har.
Ft. S. Pietro
Pelestrina
Ft. Caroman
Ft. S. Felice
Chioggia
Ft. Brondolo
Fusina
Mira
Brenta
GULF OF VENICE
A
B
C
D
E
F
G
1
2
3
8°
10°
12°
14°
16°
18
46
41
42
SWITZERLAND
AUSTRIA
HUNGARY
L. of Geneva
Chur
Meran
Klagenfurt
Laibach
Trieste
Fiume
Pola
Zara
Spalato
Cattaro
Carnic Alps
Rhaetian Alps
Ortler Sp.
Splugen
Pennine Alps
Cottian Alps
Maritime Alps
LOMBARDY
PIEDMONT
VENETIA
EMILIA
TUSCANY
UMBRIA
MARCHES
ABRUZZI
ROME
MOLISE
CORSICA
Milan
Turin
Alessandria
Novara
Brescia
Bergamo
Cremona
Piacenza
Parma
Reggio
Modena
Bologna
Ferrara
Mantua
Verona
Vicenza
Padua
Udine
Venice
Chioggia
Ravenna
Forlì
Cervia
Rimini
Pesaro
Fano
Sinigaglia
Ancona
Loreto
Perugia
Florence
Lucca
Pisa
Leghorn
(Livorno)
Genoa
Porto Maurizio
Ventimiglia
Nice
Cannes
Antibes
Siena
Arezzo
Grosseto
Orbetello
Civitavecchia
Viterbo
Aquila
Chieti
Pescara
Ortona
Vasto
Termoli
Foggia
Manfredonia
Barletta
Gulf of Manfredonia
Gargano
Vieste
Porto d'Anzio
Nettuno
Fiumicino
Tiber R.
Arrone R.
Tronto R.
Vomano R.
Sangro R.
Biferno R.
Potenza R.
Ombrone R.
Cecina R.
Arno R.
Savio R.
Po R.
Mouths of the Po R.
Po di Primaro
Comacchio
GULF OF VENICE
Gulf of Trieste
ADRIATIC SEA
LIGURIAN SEA
GULF OF GENOA
Riviera di Ponente
Riviera di Levante
G. of Spezia
Gorgona I.
Capraia I.
Elba
Piombino
Porto Ferrajo
Pianosa I.
Formica
Monte Cristo I.
Giglio I.
Giannutri
Porto S. Stefano
Talamone
Mt. Argentario
C. Linaro
C. Corso
Bastia
G. of S. Florenzo
G. of Porto
G. of Sagona
G. of Ajaccio
G. of Valinco
Ajaccio
Corte
Porto Vecchio
Bonifacio
Ghisonaccia
Tavignano R.
Strait of Bonifacio
Razzoli I.
Tremiti Is.
Pianosa I.
Pelagosa I.
Lagosta I.
Curzola I.
Meleda I.
Lissa I.
Lesina I.
Brazza
Lunga or Grossa I.
Cherso I.
Sebenico
Knin
Revigno
Verbas R.


ITALY
SCALE OF STATUTE MILES
0 10 20 40 60 80 100 120
SCALE OF KILOMETERS
0 20 40 60 80 100 120 140 160 180 200
Important towns are shown in heavy face type
Railroads
Canals
TYRRHENIAN SEA
MEDITERRANEAN SEA
IONIAN SEA
GULF OF TARANTO
Longitude 14° East from Greenwich
Naples
Bay of Naples
G. of Salerno
G. of Gaeta
G. of Policastro
G. of S. Eufemia
G. of Squillace
Bari
Brindisi
Otranto
Taranto
Catanzaro
Palermo
G. of Palermo
G. of Castellamare
Trapani
Catania
G. of Catania
Syracuse
Messina
LIPARI ISLANDS
STROMBOLI I.
USTICA I.
AEGADES IS.
PANTELLERIA I.
LINOSA I.
LAMPEDUSA I.
MALTA I.
Valetta
GOZZO
C. Bon
AFRICA
KURIAT IS.
PONTINE IS.
VENTOTINE I.
C. Spartivento
G. of Cagliari
Cagliari
C. of Oristano
G. of Orosei
ROME & VICINITY
A
B
C
D
E
F
G
4
5
6
7
8°
10°
12°
16°
18°
40°
38°
36°

be collected and distributed through the provincial grain associations in accordance with general rules laid down by the government, but subject to modifications ordered by the prefects of the different provinces having regard to the varied needs of the districts. The existing stocks must be declared by holders, whether producers, merchants, or associations; and certain premiums are provided for prompt and accurate returns, and penalties for delay or secretion. Reports from Rome state that the present stocks are amply sufficient to supply the country until the next harvest."

A table of prices (yearly average) for staple products in lire per quintal is of interest in view of present high prices the world over:

	1912	*1913*	*1914*	*1915*	*1916*
Soft wheat	30.71	28.68	28,75	40.48	38.49
Hard wheat ...	34.11	32.48	33.50	44.67	42.09
Rye	.....	.....	21.67	33.68	35.31
Barley	.....	.....	21.10	26.84	28.55
Oats	25.48	22.48	21.92	30.07	30.35
Corn	21.92	18.16	18.10	29.47	28.80
Rice	38.01	41.28	36.56	39.50	42.53
Rough rice	24.70	24.62	22.68	24.10	26.31
Beans (Fave)..	.....	.....	24.53	29.24	30.97
Haricots (Fagiuoli) ..	.....	.....	31.17	41.54	53.03
Potatoes	10.63	10.64	10.21	13.84	14.96
Hemp	.....	.....	96.04	127.25	296.13
Hay	8.95	6.46	9.48	9.38	12.20
Straw	.....	.....	4.86	5.54	6.41
Ordinary wine *	36.23	30.08	23.12	35.56	78.11
Olive oil	148.20	146.90	151.61	167.50	204.28

* Per hectolitre.

In the dairy industry the shortage of labor and the prohibition and restriction of exports have had their effect; but the former has been substituted by women and the latter has been compensated by increased home consumption. The total exports of dairy products in 1915 was 91,044,540 lire, and in 1916, 49,459,080 lire, the decrease being practically all due to lessened cheese exports. The exports of Parmesan cheese dropped from twenty millions to eight and five-tenths millions, Emmenthal from ten millions to almost nothing, while the Roman sheep cheese (pecorino) increased from seventeen to twenty millions; butter decreased from ten to half a million and condensed milk from six to two and five-tenths millions. The imports of dairy produce are unimportant, being about four millions in 1915 and one million in 1916. As the production in the two years mentioned was about equal, the quantities formerly devoted to the export trade were consumed at home, mostly by the army; thus, although this industry did not actually bring foreign credits into the country to pay for exports, the consumption of the products at home saved the necessity for importation of other foodstuffs.

The shortage of fodder was naturally reflected in the live stock industry, the principal effect being that insufficiently nourished cattle were brought to market in excessive quantities. This was a very serious situation as the effects would be felt later in a decrease in quantity of the animal wealth of the country.

Ministerial decrees were published in the *Gazetta ufficiale* at Rome, fixing maximum prices for gas coke, and modifying maximum prices previously established for cereals of Italian production. From December 1, 1917, to and including January 31, 1918, the following maximum prices per ton were fixed for sales at the works of gas coke, cash or on delivery. In large lumps, 280 lire; screened powder, 293.50 lire; nut coke, 152 lire; in bulk, not screened, 255 lire. The communes were to establish for the same period of time for their territory and for each quality of coke mentioned an extra price for the sale and consignment of goods outside the producing works. Where, without just motive, a producer or dealer, or any other seller, refused to sell gas coke at the established maximum prices, increased when such might be the case by the communal extra prices, the prefect, or in case of urgency the mayor, might sequestrate and have sold the goods for account and at expense of the owner, for whom should be reserved the quantity necessary for his own use.

Maximum prices per quintal of 220.46 pounds for cereals of Italian production of the harvest of 1918 were established as follows: Soft and semi-hard wheat, 60 lire; hard wheat, 70 lire; corn, 45 lire; oats, 45 lire; barley, 50 lire; rye, 50 lire.

An effort was being made to obtain imports of coal from the United States. Italy's coal supply was so short that during the summer more than a thousand square miles of her forests were said to have been cut down for use as firewood and in the preparation of charcoal. Over half a million tons of lignite were mined, both wood and lignite being used at present industrially and also on slow train and switch engines. As the government controlled the distribution of coal, no commercial prices were quoted, though the average wholesale price of cheap grades was from $15 to $20 a ton. The needs of the railroads, ammunition factories, and war industries were placed at 800,000 tons. Practically no coal was required for domestic purposes, since heating had been suppressed except in public buildings. Cooking was done with gas or charcoal, the latter a native product; but the prices of charcoal averaged $50 a ton retail, due partly to scarcity and partly to speculation. Signor Giretti, the member for Torre Pellice, at a meeting of all classes and religious beliefs—the constituency has a large Waldensian population—dwelt on the economic situation. "We," said Signor Giretti, insisting upon the necessity for Italy's close union with her Allies, "notwithstanding the war, are existing and working exclusively owing to unlimited supplies from Great Britain and the United States. We need to double our imports of wheat; we drew seven million tons of coal from England in 1916, and 200,000 Italian cotton operatives depend on the imports of raw cotton which come almost exclusively from the United States, British India, and Egypt."

The labor question immediately after the war will be acute. The prices of commodities will not decrease to normal for some time, and this factor will have a tendency to force all available members of laboring families into the labor market.

Signor Silvio Crespi, an eminent business man of northern Italy, was appointed under secretary of state and food commissioner. It was expected that the new commissioner would be attached to the Ministry of Industry, Commerce, and Labor.

All soldiers who return from the front after the war will be entitled to the payment of $200, provided this sum is invested in the purchase of land, agricultural implements, or cattle, or used as capital to start or resume business. Coöperation in connection with agricultural work will also be encouraged by affording the means for the purchase of land on the part of soldiers who are agricultural laborers or farm hands. The new scheme of free life insurance for all soldiers in Italy will be extended to officers. As pensions are inadequate and their payment is inevitably delayed, both these drawbacks are in part remedied by the present scheme, as payment of the life insurance policy for $100 is effected as soon as the death of the policy holder is officially announced.

Crop Returns. The changeable weather during May was favorable for crops. The rains were specially propitious for wheat in the southern provinces. The area under rice in 1917 was 145,000 hectares, as compared with 142,700 in 1916 and 145,300 for the five years' average, 1911 to 1915, or respectively 101.8 per cent and 99.8 per cent of the two last-mentioned areas. The condition of the crop on June 1, 1917, was good, as it was also at the same time the year before.

In the table below are given the area in hectares sown to principal crops and the yield in metric quintals:

	Hectares		*Quintals*	
	1916	*1917*	*1916*	*1917*
Wheat	4,272,000	4,726,300	38,102,000	48,044,000
Rye	113,000	115,500	1,133,000	1,357,000
Barley	190,000	241,000	1,616,000	2,201,000
Oats	447,900	446,300	4,919,000	3,785,000
Corn	1,568,000	1,585,500	22,000,000	20,714,000
Rice	140,200	142,700	5,122,000	5,203,000
Flax *	18,000	18,000	75,000	92,000
Potatoes	320,000	295,100	15,000,000	14,772,000
Beets	50,000	49,800	....	13,483,000
Vines †	4,350,000	4,349,000	72,882,000	38,960,000
Tobacco	7,000	7,000	....	90,000

* Production of seed; fibre production was 25,000 qs. in 1917.

† Production in hectolitres of wine for 1916, in quintals of grapes for 1917.

Allowing 200,000 tons of grapes as the amount consumed as fruit, and calculating 180 gallons of wine per ton for the remainder, the wine production of Italy for 1917 should amount to practically 1,273,295,250 gallons, as compared with 1,117,764,000 gallons, the average quantity of wine obtained during the years 1909-16.

The following table shows the production of grapes in the different districts of Italy during 1917, compared with the average annual yield for the years 1909 to 1916:

	1917	*1909-16*
Piedmont	917,000	853,500
Liguria	82,300	104,700
Lombardy	366,700	818,200
Venetia	533,500	481,600
Emilia	859,400	811,600
Tuscany	755,800	535,200
The Marches	399,200	302,800
Umbria	219,500	154,300
Rome	506,500	314,400
Abruzzi e Molise	278,600	247,200
Campania	892,100	691,900
Apulia	510,000	651,000
Basilicata	59,100	60,700
Calabria	100,500	119,900
Sicily	724,400	666,600
Sardinia	72,900	96,200
Total	7,288,200	6,400,800

Commerce. Imports for consumption and exports of domestic produce—merchandise and coin and bullion—are given below for three years (values in lire). Figures for 1915 and 1916 are derived from an unofficial source and are subject to revision.

	1913	*1915*	*1916*
Imps. mdse.	3,637,771,000	4,947,682,253	5,507,424,700
Imps. C. & B.*	21,014,000	17,517,350	....
Total	3,658,785,000	4,965,199,603	5,507,424,700
Exps. mdse.	2,503,914,000	2,556,234,629	2,313,334,300
Exps. C. & B.*	80,287,000	3,286,515	....
Total	2,584,201,000	2,559,521,144	2,313,334,300

* Includes all precious metals.

The trade, exclusive of coin and bullion, for the first nine months of 1917 had a value of 7,774,422,703 lire, compared with 8,794,220,161 lire for the corresponding period of 1916, and 5,246,050,751 lire in the same period of 1915. These totals were made up in 1917 of imports 6,455,794,947, exports 2,338,425,214; 1915, 3,280,371,325 and 1,965,679,426. (The normal value of the lire is 19.3 cents, but it is now fluctuating.) The figures for 1917 are provisional.

In thousands of lire are given in the table below some details of the special trade for the year 1915:

Imports	*1000 lire*	*Exports*	*1000 lire*
Cereals	514,721	Raw silk	335,637
Coal & coke	289,005	Cotton mfrs.	191,066
Raw cotton	492,201	Silk mfrs.	155,163
Machinery	61,268	Fruits	85,379
Timber	24,752	Wines	42,013
Raw silk	72,459	Cheese	66,383
Wool & Mfrs.	208,470	Hemp (raw)	29,430
Coffee	57,939	Hides	15,967
Instruments	48,073	Sulphur	31,774
Hides	172,749	Pulp of wheat	24,494
Iron mfrs.	56,132	Yarn, etc.	94,317
Silk mfrs.	17,814	Automobiles	27,551
Fish	51,504	Fresh vegetables	11,318
Tobacco	29,626	Hats	19,045
Oil seed	38,277	Rubber mfrs.	62,518
Copper, etc.	84,755	Tomato conserve	27,001
Rubber mfrs.	55,912	Marble, etc.	18,832
Petroleum, etc.	35,950	Olive oil	52,934

The more important countries of origin and destination follow, with values in thousands of lire:

Imports		*Country*	*Exports*	
1915	*1916*		*1915*	*1916*
849,404	1,078,919	U. K.	391,064	374,001
1,749,204	2,202,400	U. S.	283,359	235,335
240,107	458,415	France	437,710	543,567
....	....	Russia	184,124	....
480,056	434,940	Argentina	141,104	153,577
221,001	237,747	British India *	51,221	65,617
....	....	Belgium	....	....
118,118	134,576	Switzerland	314,082	395,710
....	....	Turkey	....	....
34,107	....	Germany	104,960	....
487,878	....	Aus.-Hun.	337,696	....

* With Ceylon.

Shipping. Italian shipping interests have hitherto been controlled to a large extent by foreign capital, which was detrimental to their full development, Italian mercantile tonnage being the lowest of any large nation, in proportion to population and foreign trade, with the exception of the United States. This problem will be one of the first to confront Italy after the war. Her shipping is at present suffering, in common with that of all other nations, by the heavy submarine losses. The national metal industries are strained to their limit by the demands for war supplies and the difficulty of obtaining raw material, and this condition reacts seriously upon the shipbuilding industry. Purchase of vessels is practically impossible with present prohibitive prices. Yet both construction and purchase will be imperative, and it is probable that the government will grant subsidies.

The merchant marine was reported January 1, 1915, to include 9 steamers over 5000 tons, aggregating 47,016 tons; 54 (3001-5000 tons), aggregating 194,827; 133 (2001-3000), 315,359; 171 (1001-2000), 252,988; 120 (501-1000), 84,122; 126 (101-500), 33,052; 336 (1-100), 5792—a total of 949 steamers aggregating 933,156 tons. Sailing vessels over 2000 tons, 4, aggregating 8545 tons; 91 (1001-2000 tons), aggregating 126,274 tons; 64 (501-1000), 47,084; 367 (101-500), 71,868; 4247 (1-100), 95,188—a total of 4773 sailing vessels aggregating 348,959 tons. Total steam and sailing, 5722, aggregating 1,282,115 tons.

The destruction of merchant vessels from the beginning of the war to the end of February, 1917, resulted in the loss of 121, aggregating 225,114 gross tons.

RAILWAYS. Italy during the year as regards its railways suffered from an extraordinary fuel shortage. Eight hundred thousand tons of coal per annum are required for railroads, munitions, factories, and war industries, and more than 500,000 tons of lignite in addition was mined for use industrially. Wood and lignite were used on slow trains and switch locomotives, but these fuels could not be employed with the passenger traffic, which during 1917 was particularly heavy on account of the movement of troops. On the Italian State Railways, commencing with November 25, it was decided to cancel 173 trains.

FINANCE. On "war profits" of traders and manufacturers, exceeding 8 per cent and up to 10 per cent of invested capital, Italy levied a tax of 20 per cent, the rate being graduated upward, until on profits exceeding 20 per cent a levy of 60 per cent was made. "Indirect war profits" ranged from 10 to 40 per cent on sums in excess of ordinary income.

A decree published January 20, 1917, authorized the issue of a fourth national 5 per cent loan, free of taxation present and future, and unconvertible until the end of 1931. The issue price would be 90, and subscriptions would be received from February 5 to February 25. Payments might also be made in gold and government securities of foreign countries. Italians resident abroad might purchase the script at the issue price up to February 25 in Europe and Mediterranean countries, and up to April 30 in other foreign countries. Official announcement was made at Rome, February 26, that the subscriptions thus far received for the new war loan amounted to 2,200,000,000 lire, about $440,000,000. Of this 1,470,000,000 lire was new money.

Several Italian banks, acting in concert and headed by the Bank of Italy, had loaned $50,000,000 to the Russian government, according to a Milan dispatch to *Le Temps*, Paris, January 22. The proceeds of the loan were to be applied to making payments for war supplies purchased in Italy, principally aviation materials and chemicals.

The London *Times* stated, March 12, that arrangements had been made to open a credit in Great Britain for Italy on a basis similar to that adopted for Russian credits. Three of the principal clearing banks and a number of Scottish banks had arranged to accept three months' bills. These acceptances, which will be renewable as they fall due, will be secured by the deposit of Italian treasury bills.

In coöperation with the Bank of Naples, the foreign exchange department of the Equitable Trust Co. was receiving subscriptions in the United States to the consolidated 5 per cent tax-free perpetual internal Italian government loan offered in Italy on February 5 at 90. The loan was dated January 1, 1917, and the interest coupons were payable January and July. There was no limit to the amount of the issue and it was not convertible before 1931. Subscriptions were being taken at the trust company in lire at the issue price of 90, based on the day's rates of exchange. At this price and at the current New York rate of Italian exchange, the bonds were selling on the basis of about 11½ cents to lira, against a normal rate of 19.3 cents. Principal and interest of the bonds were payable in Italian currency, so that the price of the bonds might be expected to fluctuate on this market with the fluctuations in the rate of Italian exchange. The proceeds from the sale of the bonds were to be deposited in New York and used to make payment on account of purchases by the Italian government.

To quote from Homer Edmiston's remarks on the situation in 1917: "In spite of the enormous sums absorbed by the war loans, the banks have an abundance of cash on hand, largely on account of the lack of commercial paper for discount, and this condition is due in turn to the demand, begun of course by foreign houses, for payments in advance or against documents. There is, in consequence, an active dealing in the short-term treasury notes, which the banks are ready to discount freely for their customers.

"The only serious difficulty that Italian trade now feels, apart from the dislocation of commerce and industry that are inseparable from war, is due to the very unfavorable rates for foreign exchange, and to the ruinous cost of marine transportation. Freight from New York has been quoted for this month at four dollars per hundredweight, and on the day on which I write (February 14) dollar exchange has reached the unprecedented height of 7.305."

Revenue and expenditure are given in lire in the table below for three financial years (the figures for 1915-16 are subject to revision):

	1913-14	*1914-15*	*1915-16*
Revenue ..	3,160,230,044	2,843,544,073	3,007,027,827
Expend. ..	3,129,228,156	2,863,213,485	2,960,545,028

The budget for 1916-17 is detailed below:

Revenue	*1000 lire*
Real property	14,411
Railways	12,760
Land tax	90,490
Income tax	376,000
House tax	184,000
Succession duties	60,000
Registration	105,400
Stamps	125,765
Railway traffic	49,775
Excise	272,080
Customs	334,000
Octrois	51,340
Tobacco	420,030
Salt	110,000
Lotteries	100,000
Quinine	2,700
Posts	145,500
Tels. & tels.	58,300
Repayments	108,283
Viraments	113,607
Total Ordinary	2,980,822
Various receipts	10,397
Railway construction	30,000
Movement of capital	4,114
Compensations, etc.	34,298
Loans	480,961
Total Extraord.	568,502
Grand Total	3,549,325

Expenditure	*1000 lire*
Treasury	944,403
Finance	347,321
Justice	57,846
Foreign affairs	14,468
Instruction	195,363
Interior	111,049
Public works	64,881
Posts & Tels.	139,695
War	347,862
Marine	259,733
Agriculture, etc.	24,156
Colonies	58,842
Total Ordinary	2,563,619
Treasury	457,793
Finance	3,035
Justice	105
Foreign affairs	2
Interior	10,095
Instruction	15,708
Public works	124,723
Post & Tels.	14,069
War	51,151
Marine	9,622
Agriculture, etc.	7,520
Colonies	77,502
Total Extraord.	771,325
Grand Total	3,334,943

Capital of the debt, July 1, 1915, 15,927,718,517 lire; interest, 572,101,926.

GOVERNMENT. Italy is governed by Victor Emmanuel III, the third constitutional king. The first was Victor Emmanuel II, king of Sardinia, of the house of Savoy-Carignano, who was declared king of Italy March 17, 1861, by the first Italian parliament, which assembled in February, 1861, though it was not until 1870 that the province of Rome was occupied by the Italian army and annexed to the kingdom. The second was King Humbert I, who on July 29, 1900, was assassinated at Monza by the anarchist, Bresci.

Victor Emmanuel III was born November 11, 1869, and in October, 1896, was married to Princess Hélène of Montenegro. The heir to the throne is Humbert (Umberto Nicola Tommaso Giovanni Maria) Prince of Piedmont, born September 15, 1904. Other children are Yolanda Margherita, born June 1, 1901; Mafalda, born November 19, 1902, and Giovanna, born November 13, 1907.

The Italian cabinet at the end of the year was constituted as follows: President of Ministers and Minister of the Interior, Vittorio Emanuele Orlando; Minister of Foreign Affairs, Baron Sidney Sonnino; of Colonies, Gaspare Colosimo; Justice and Worship, Ettore Sacchi; Finance, Filippo Meda; Treasury, Prof. Francesco Nitti; War, Lieutenant-General Vittorio Alfieri; Navy, Vice-Admiral Alberto del Buono; Arms and Munitions, Lieutenant-General Alfredo Dall 'Olio; Civil Aid and War Pensions, Leonida Bissolati Bergamaschi; Public Instruction, Agostino Berenini; Public Works, Luigi Dari; Agriculture, Giambattista Miliani; Industry, Commerce, and Labor, Augusto Ciuffelli; Posts and Telegraphs, Luigi Fera; Transportation, Riccardo Bianchi. See FINANCIAL REVIEW; and ARCHÆOLOGY.

HISTORY

THE BOSELLI MINISTRY. The coalition cabinet which had been formed in June, 1916, under Signor Boselli, began with some vigorous measures and the strong support of parliament. The Socialists, having attempted to force a discussion of all questions of food supply and foreign and military policy, the prime minister insisted on its being deferred six months. It was made a point of confidence and the government won by 237 to 31. The Chamber again voted confidence by nearly as large a majority on March 18. The opposition gained ground, however. It came chiefly from the extreme Socialists and pacifists in parliament and from the discontented labor classes outside. The opposition attacked the ministry both on pacifist grounds and on behalf of the labor classes. In June internal disagreements caused a cabinet crisis. Three of the members objected to the choice of persons who took part in the Italian mission to the United States and they protested vigorously against the course of the foreign minister, Sonnino, in proclaiming Albania a protectorate without having secured the formal approval of the whole cabinet. These members, however, had never been in sympathy with their colleagues; one being a Republican and the other two Reformed Socialists. When the cabinet was reconstructed they were dropped out. The changes as announced on June 17 were as follows: General G. Giardino, Minister of War; Rear-Admiral A. Triangi, Minister of Marine; General Dall 'Olio, Minister of Munitions; Signor Arlotta, Minister without portfolio, and Signor Bianchi, Minister of Marine Transport.

On June 30 the Chamber, after ten days' secret session, opened its public sessions with the declaration that it had come to an understanding with the government. On July 10 the leaders of the Socialist Reformist party, in a meeting at Rome, formally separated themselves from the parliamentary group of the party. The budget was explained to the Chamber on July 11. The censorship which occasioned much criticism was the subject of much discussion between a committee of six journalists and the prime minister, Boselli, and the minister of the interior, Orlando, in a conference on July 16.

ITALY'S PART IN THE WAR. On the occasion of the Italian mission to the United States (see UNITED STATES AND THE WAR) there was much discussion of Italy's part in the war from the beginning. It was pointed out that Germany did not insist that Italy should enter the war on her side. It would have been enough for Germany if Italy had kept the French government in uncertainty, since if that had lasted even a few days France would have been obliged to defend her Alpine frontier and thus weaken the forces with which she had to meet the German invasion. The promptness of the Italian government saved France from this catastrophe. The Marquis de San Giuliano, on July 30, 1914, informed the government at Paris that Italy would not side with the Central Powers. Then on August 2, after a cabinet council, which decided upon Italian neutrality, the news was immediately telegraphed to Paris, and the Italian representative repeated it to M. Viviani that same night at one o'clock. This release of the troops on the Alpine frontier enabled the French to reënforce the army opposing the Germans and may have been a decisive factor in determining the issue of the Battle of the Marne.

THE GOVERNMENT'S FOREIGN POLICY. The Italian Chamber resumed its sessions early in July. The policy of the government was outlined by the prime minister, Signor Boselli, in an address of which the following points may be noted: After paying a tribute to the Italian troops and congratulating the country on the recent military successes he mentioned certain modifications in the ministry and declared that both the war and navy departments were intensifying their efforts and that the latter was making special endeavors to meet the submarine danger. He was followed by the minister of foreign affairs, Baron Sonnino, who discussed the questions of the Russian revolution and of Rumania, Poland, and Albania. As to Russia, he declared that the only safe course for her consisted in complete accord with the Allies and in firm prosecution of the war. Rumania he believed was preparing to avenge herself for the defeat she had sustained. The chief terms of peace to be insisted upon were the restoration of the unfortunate nations whose territory had been occupied and devastated such as Belgium, Serbia, and Montenegro. Italy, he said, was in complete agreement with her Allies in regarding the unification of an independent Poland as one of the objects of the war. As to Albania, he said that the recent proclamation of the Italian minister in Albania showed anew the special interest on the part of Italy in the fate of that country. The destiny of Albania was of vital importance to Italy in its relation to the whole question of the control of the Adriatic. Italy has recommended the independence of Albania in conformity with the spirit of the Allies as illustrated by the new Russian liberalism and by the words of the United States government. Toward Albania Italy has no other aim than the prevention of interference on the part of other powers. Italy guarantees Albania complete right of disposing of her own internal political life. After the war it will rest with the Powers assembled to determine the treaty of peace to fix the exact frontiers of the Albanian state. After the conclusion of peace, the Albanians themselves will decide freely upon their internal, political, administrative, economic, and civil administration.

THE FALL OF THE BOSELLI MINISTRY. After the great Italian defeat there seemed to be an endeavor on the part of certain political groups to find a scapegoat. They attacked with special severity Gen. Cadorna and demanded his dismissal. The Socialists and others insisted on the severest punishment of those who by their faults and deficiencies had made it possible for the enemies to invade the country. The foreign minister, Baron Sonnino, was also singled out for attack. The attacks on the government led to its downfall on October 25, and a new ministry, under Signor Orlando, succeeded on October 31 (for personnel see above under *Government*). During a debate in October the Reformist Socialist Minister, Signor Bissolati, greatly angered the official Socialists by saying, when the government was criticized for its measures in putting down the riots in Turin, that if he had to defend the army from stabs in the back he himself would fire upon the Socialists. Later in the discussion Signor Orlando in answer to some sharp words from the extreme Left declared that he, too, would take the course that Signor Bissolati had mentioned.

At the accession of the new Orlando Ministry the Prime Minister sent dispatches to the French and British prime ministers and to President Wilson to the effect that Italy was still firm in her faith in her Allies and would carry the war through with them to victory, in spite of the severe trial that she was now undergoing from the German invasion. See WAR OF THE NATIONS; and PROSTITUTION.

IVORY COAST. One of the colonies composing the government-general of French West Africa. It lies between Liberia and the British colony of the Gold Coast. The capital is Bingerville, with 78 Europeans and 780 native inhabitants. Other centres are: Grand-Bassam, 164 Europeans and 2832 native inhabitants; Abidjan, 110 and 613; Lahou, 78, and 3050; Tiassalé, 17 and 1548; Aboisso, 38 and 1241; Assinie, 38 and 1135. The principal products for export are mahogany and other woods, palm kernels and oil, rubber, manioc, and ground nuts. See FRENCH WEST AFRICA.

JACKSONVILLE. See MUNICIPAL GOVERNMENT.

JAEGER, GUSTAV. A German zoölogist and hygienist, died in Stuttgart, May 16, 1917. He was born in 1832 at Bürg in Württemberg and was educated at Tübingen and as a physician at Vienna, where he became docent of zoölogy in 1858. He was also director of the Vienna zoo till 1866. Jaeger continued as a teacher in various places up to 1884, when he settled in Stuttgart as a physician. By this time he had become known as a disciple of Darwin through such writings as *Die Darwinsche Theorie und ihre Stellung zu Moral und Religion* and *In Sachen Darwins*, and as a writer on general zoölogical subjects. To him is credited an early promulgation of a theory to explain heredity similar to the germplasm theory later developed by Weismann. But Jaeger is best known as the advocate of a new doctrine regarding clothing, discussed in *Die Normalkleidung als Gesundheitsschutz* (1880), a book later called *Mein System*. He disapproved all fabrics containing vegetable fibre and advised use of all-wool garments, especially as underclothing. In 1887 appeared *Die Uniform im Licht der Gesundheitslehre*. In later years Jaeger was also known, and generously ridiculed, for advancing a theory of "affinities"—namely, that odors emanating from two souls were responsible for the attraction of lovers to each other.

JAMAICA. The largest of the British West Indies; a crown colony, with dependencies as follows: Turks and Caicos Islands, Cayman Islands, Morant Cays, and Pedro Cays. Area of Jamaica, 4207 square miles. Population estimated March 31, 1916, 894,735. Kingston (57,379 inhabitants) is the capital and has a fine harbor. Available for cultivation, 2,612,480 acres; returned as under crops in 1915-16, 987,679 acres; tilled lands, 278,262 acres; guinea grass, 172,122; commons, 535,295. Area under sugar cane, 33,830 acres; under coffee, 18,383, under bananas, 89,477. Imports (1915), £2,327,458; exports, £2,228,664. Railway, 197 miles. Revenue (1915-16), £1,132,049; expenditure, £1,105,942.

JAMESON. Sir LEANDER STARR. A British physician, soldier, and administrator, popularly known as "Dr. Jim," and leader of the famous Jameson raid on the Transvaal in 1895, died November 26, 1917, in London, England. A son of R. W. Jameson, writer to the *Signet*, he was born in Edinburgh in 1853, graduated from London University in 1875, took his medical degree two years later, and in 1878 was compelled by ill health to seek a change of climate in Cape Colony, South Africa. He settled at the mining town of Kimberley, where he practiced his profession. He became an associate and friend of Cecil Rhodes, who also had gone to South Africa on account of ill health. Rhodes procured his appointment as administrator of Rhodesia in 1891, under the British South Africa Company, of which Jameson afterward became president. In 1893 Jameson organized an expedition against the Matabele; but affairs in the Transvaal soon claimed his attention. The Uitlander or foreign element in that republic was discontented, and in sympathy with that discontent, Rhodes placed a body of troops under Jameson's command on the border of the Transvaal. The chief seat of disaffection was Johannesberg, and on receipt of a letter from that city Jameson, taking the initiative, crossed the Transvaal border with 600 men on December 29, 1895. On January 1 he attacked Krugersdorp, but was unable to take the town, and on the following day he fought an action against the Boers at Doornkoop, where he was forced to surrender after losing seventeen killed and forty-seven wounded. The raid excited the interest of the civilized world and was almost universally condemned. Jameson and his officers were taken to Pretoria and sentenced to be shot; but President Kruger turned them over to the British Government, and they were taken to London and tried. Jameson was sentenced in May, 1896, to ten months' imprisonment but was released in December on account of ill health. He fought against the Boers in 1899-1900, was elected a member of the legislative assembly of Cape Colony in the latter year, was premier of the colony in 1904-08, and in 1910-12 was a member of the first Parliament of the Union of South Africa which met at Cape Town. In 1907 he was made an imperial privy councillor, and in 1911 he was created a baronet. The last few years of his life were passed in England.

JAMESTOWN NAVAL BASE. See NAVAL PROGRESS.

JANEWAY, THEODORE CALDWELL. Dr. Janeway, formerly Bard professor of medicine at Columbia University and after 1914 professor of medicine at Johns Hopkins University, died on December 27, 1917. He was the son of the late Dr. Edward Janeway, one of the most eminent physicians of his time, and was born in New York City in 1872. In 1892 he was graduated from Yale and was appointed instructor in bacteriology in Columbia in 1895, and later was an instructor and lecturer in the New York University and Bellevue College. He was instrumental in organizing under a single head the professional service at the Presbyterian Hospital. Dr. Janeway was a member of the board of scientific directors of the Rockefeller Institute for Medical Research, the Association of American Physicians, the Editorial Board of the Archives of Internal Medicine, the Society of Experimental Biology and Medicine, the American Society of Advanced Clinical Investigation, and the American Medical Association. He made valuable contributions to medical literature, his name being particularly identified with the clinical study of blood pressure. Since the United States entered the war Dr. Janeway had been engaged in special research work for the government. He was a major in the medical officers' reserve on duty in Washington.

JAPAN. An empire of the Far East. The capital is Tokyo.

AREA AND POPULATION. The empire consists of Japan proper, Korea, Formosa, Karafuto, Kwantung (a lease hold in southern Manchuria), and the Pescadores. The total area is stated at 260,099 square miles. This area is nearly equivalent to the combined extent of the States of Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Alabama. The total population, as calculated for the end of 1916, is about 77,240,000. This article deals with Japan proper; for other portions of the empire, see KOREA, FORMOSA, KARAFUTO, KWANTUNG.

Japan proper consists of four large and many small islands. The total area is 24,794.36 square ri (382,415 square kilometres, or 147,657 square miles), which is a little larger than the State of Montana. The large islands are: Honshiu (called also Hondo and Mainland), 86,305 square miles, an area slightly larger than the combined extent of Pennsylvania and Ohio; Kiushiu, 13,768 square miles; Shikoku, 6856 square miles; Hokkaido (called also Yezo), 30,144 square miles. The total legal population was estimated for December 31, 1916, at 55,965.292, as compared with 55,083,949 at the end of 1915 and 51,753,934 at the end of 1911. The average increase per thousand inhabitants was 14.48 in the period 1907-11 and 15.76 in 1912-16.

The following table shows the area by divisions. The first seven divisions comprise Honshiu with attached islands; the next three divisions consist of the other three large islands together with their attached islands; and the last division, Okinawa, is the Riukiu islands. The population figures are calculated for the end of 1913; they are probably excessive, the total being larger than the total for the end of 1915, as given above. The discrepancy is due principally to duplicated registrations of persons removing from one part of the country to another. But the figures serve to show the relative population of the several parts of Japan.

Divisions	*Sq. km.*	*Legal pop. 1913*	*Pop. per sq. km.*
Tohoku	65,507.0	5,739,722	88
Kwanto	32,047.1	10,512,239	328
Hokuriku	25,203.8	4,178,700	166
Tosan	27,510.1	3,276,535	119
Tokai	22,749.6	5,267,478	232
Kinki	22,842.0	7,264,075	318
Chiugoku	30,719.4	5,272,060	172
Total	226,579.0	41,505,809	183
Hokkaido	94,011.6	1,817,705	19
Shikoku	18,210.0	3,293,418	181
Kiushiu	41,194.4	7,979,928	194
Okinawa	2,420.1	534,415	221
Grand total	382,415.0	55,131,279	144

The reported number of Japanese residing abroad June 30, 1915, is 367,123, of whom

119,668 were in China, 99,104 in the United States, 93,877 in Hawaii, 12,053 in Canada, 6261 in the Straits Settlements, 5979 in Peru, 5752 in the Philippines, 5282 in Australia, 2737 in Mexico, and 2460 in Brazil. Foreigners resident in Japan December 31, 1915, numbered 18,395, of whom 12,071 were Chinese, 2356 British, 1644 Americans, 706 Germans, 414 French, and 205 Portuguese. Ainos, the indigenes of Hokkaido, numbered, on December 31, 18,670 in 1915, as compared with 18,347 in 1914 and 17,632 in 1905.

The movement of the population is shown in the following table:

		1907	1911	1912	Average 1903-12
Marriages	No.	433,527	434,538	431,992	411,821
	Rate	8.88	8.40	8.22	8.33
Divorces	No.	61,193	58,802	59,418	61,836
	Rate	1.25	1.13	1.13	1.25
Living births	No.	1,621,973	1,763,639	1,756,553	1,604,129
	Rate	33.2	34.1	33.4	32.5
Stillbirths	No.	158,814	155,819	147,545	158,612
	Rate *	8.92	8.09	7.75	8.78
Deaths	No.	1,024,286	1,053,460	1,048,378	1,027,762
	Rate	21.0	20.4	20.0	20.8

* Per hundred births.

As reported for December 31, 1916, the legal population of Tokyo was 2,224,796; Osaka, 1,460,218; Kyoto, 539,153; Kobé, 498,317; Nagoya, 489,272; Yokohama, 428,663. Other cities, with legal population at the end of 1913: Hiroshima, 167,130; Nagasaki, 161,174; Kanazawa, 129,804; Kuré, 128,342; Sendai, 104,141; Hakodate, 99,795; Fukuoka, 97,303; Sapporo, 96,924; Saseho, 94,914; Otaru, 92,864; Okayama, 86,961; Yokosuka, 85,473; Wakayama, 77,683; Kagoshima, 75,907; Shimonoseki, 72,117; Moji, 71,977; Tokushima, 70,292; Kumamoto, 68,167.

Education. Japan's educational system is well organized and efficient. Much emphasis is laid on industrial and technical instruction. Primary instruction is compulsory between the ages of six and fourteen. The following statistics of public educational institutions relate to the school year 1914-15: infant schools, 605, with 1699 women in charge and 48,813 children; primary schools, 25,558, with 159,754 teachers (115,106 male, 44,648 female) and 7,263,733 pupils (3,887,854 male, 3,375,879 female); secondary schools for boys, 319, with 6453 teachers (male) and 136,778 students; superior schools for girls, 346, with 4389 teachers (1888 male, 2501 female) and 90,009 students; lyceums for boys, 8, with 366 teachers (male) and 6215 students; normal schools, 90, with 1661 teachers and 27,739 students (18,894 male, 8845 female); superior normal schools, 4, with 227 teachers and 1781 students (1088 male, 693 female). There are many special, technical, and professional schools, with a very large attendance. The four imperial universities in 1914-15 had a teaching staff of 865, with 9611 students: the Imperial University of Tokyo, 408 teachers and 5223 students; the Imperial University of the Northeast (Tohoku), 188 teachers and 1905 students; the Imperial University of Kyoto, 183 teachers and 1865 students; the Imperial University of Kiushiu, 86 teachers and 618 students.

Libraries open to the public in 1914-15 numbered 708, with 3,689,667 volumes, of which 3,445,236 were Japanese and Chinese and 244,431 European. At the end of 1914 there were 2719 newspapers and periodicals.

There is no state religion or government support of religion, and complete freedom of worship prevails. The principal religious forms are Shintoism and Buddhism. At the end of 1914, Christian churches and chapels numbered 1389, with 2316 preachers (1547 Japanese, 769 foreigners), as compared with 1219 churches and chapels and 1966 preachers (1286 Japanese, 680 foreign) at the end of 1909. At the end of 1914, the Episcopalian clergy numbered 423; Methodist, 409; Presbyterian, 388; Orthodox, 225; Roman Catholic, 203; Congregational, 174.

Agriculture. Nearly one-fifth of the taxable land of Japan is planted to rice, which is by far the most important crop. The table below shows the area in cho under important crops and the production in thousands of koku and thousands of kwan (1 cho = 2.4501 acres; 1 koku = 5.119 bushels U. S.; 1 kwan = 8.26733 pounds, or 3.75 kilograms):

	Area		Production	
	1915	1916	1915	1916
	Cho	Cho	1,000 Koku	1,000 Koku
Rice	3,056,567	3,072,129	55,925	58,443
Barley	595,865	570,597	10,254	9,559
Rye	715,207	685,585	8,297	7,922
Wheat	500,757	531,094	5,281	5,870
			1,000 Kwan	1,000 Kwan
Tea	48,119	48,938	9,152	10,183
Tobacco	36,183	30,776	15,154	13,088

	Area		Production	
	1914	1915	1914	1915
	Cho	Cho	1,000 Koku	1,000 Koku
Soy beans (daidzu)	464,605	470,849	3,665	3,808
Red beans (azuki)	130,003	130,894	913	962
Foxtail millet	168,428	169,701	1,747	2,083
Proso millet	36,351	34,530	461	413
Buckwheat	161,558	154,183	1,369	1,256
Rape-seed	124,118	121,859	883	877
			1,000 Kwan	1,000 Kwan
Potatoes	88,818	91,628	234,503	254,759
Sweet potatoes	305,014	307,366	981,108	1,055,634
Hemp	11,017	11,608	2,525	2,474
Leaf indigo	4,513	6,556	2,180	3,510
Sugar cane	22,601	23,692	266,955	263,866

In 1915 the production of silk cocoons amounted to 4,647,428 koku, and in 1916 to 5,708,463 koku; raw and waste silk, 5,460,296 and 6,084,406 kwan.

Live stock at the end of 1914 and 1915 respectively: cattle, 1,387,233 and 1,387,922; horses, 1,579,454 and 1,579,517; sheep, 2771 and 2768; goats, 95,323 and 97,396; swine, 332,465 and 333,276. Slaughter during 1915: cattle (and calves), 277,980; horses, 59,969; sheep and goats, 9362; swine, 278,465.

MINING. Mine employees numbered 290,084 on June 30, 1915, as compared with 270,580 in 1913 and 233,827 in 1909. Employees in metalliferous mines in 1914, 86,359; in coal mines, 193,142; in other mines, 10,583. The following table shows the quantity and the value in yen of the mineral products:

		Quantity		*Value*	
		1914	*1915*	*1914*	*1915*
Gold	* momme	1,916,763	2,211,931	9,898	10,805
Silver	momme	40,252,208	42,469,615	5,370	5,288
Copper	† kin	117,439,081	125,692,782	39,067	53,732
Lead	kin	7,603,654	7,940,593	827	976
Pig iron	‡ kwan	19,746,550	17,327,499	2,742	2,497
Steel	kwan	4,102,628	4,469,847	865	1.165
Iron pyrites	kwan	30,873,548	18.009,921	601	380
Antimony	kin	54,956	13,913,471	5	8.205
Coal	metr. tons	22,293,419	20,490,747	80,350	65,069
Sulphur		......	......	2,003	1,902
Petroleum	§ koku	2,307,435	2,568,359	9,481	9.873
Others		......	......	8,396	15,976
Total		......	......	154,057	175,959

* 1 momme = 3.75 grams.
† 1 kin = 0.6 kilogram.
‡ 1 kwan = 3.75 kilograms.
§ 1 koku = 1.80391 hectolitres, or 47.65389 gallons.

The production of salt, not included above, amounted to 1,018,176,873 kin, valued at 11,904,123 yen, in 1914-15, and 995,268,132 kin, valued at 11,246,562 yen, in 1915-16.

MANUFACTURES. Factories employing over ten persons at the end of 1915 numbered 16,809, of which 10,688 were operated by motor power. Employees numbered 910,799 (350,976 male, 559,823 female). Textile factories numbered 8406, with 561,631 operatives; machine and iron factories, 1426, with 105,267 operatives; chemical factories, 1833, with 97,965 operatives; food and drink factories, 2377, with 51,251 operatives; miscellaneous factories, 2585, with 85,210 operatives; special factories (gas and electric works and metal refineries), 177, with 9475 operatives. In 1915, the average number of spindles in cotton spinning was 2,787,720; production of yarn, 85,288,449 kwan; as compared with 82,342,487 kwan in 1914 and 56,396,939 kwan in 1910. The following values, in thousands of yen, represent production in 1914 and 1915 respectively: cotton fabrics, 150,386 and 182,384; silk fabrics, 102,482 and 121,687; fabrics of silk and cotton mixed, 25,543 and 27,407; woolen fabrics and mixtures, 40,527 and 40,284; hemp fabrics, 4705 and 4867; miscellaneous woven fabrics, 2822 and 3499; total of woven fabrics, 326,465 and 380,128; Japanese paper, 18,563 and 22,396; European paper, 25,097 and 29,710; matches, 15,546 and 22,771; porcelain and earthenware, 15,657 and 17,532; floor mats and matting, 7487 and 8097; lacquered ware, 8738 and 9778; knittings, 13,733 and 30,749; oil, 16,625 and 20,476; leather, 9144 and 19,688; sake, 4040 and 4244; peppermint, 3575 and 4700; indigo, 1933 and 3021; crude camphor and camphor oil, 1194 and 1762; colle, or vegetable isinglass, 1833 and 2479; straw-plaits, wood-chip, and hemp-braids, 9443 in 1915.

ECONOMIC CONDITIONS. Japan felt little effect of the great war for three years, and had unprecedented prosperity because of increased exportation and especially the development of new industries and shipping. But the entrance of the United States into the war brought a change, and in the autumn of 1917 it was expected that Japan would have financial and industrial difficulties like the other belligerent nations. Japan suffered particularly from the embargo on the export of iron, steel, and gold from the United States. Shipbuilding and other steel-using industries which suddenly developed after the war began could not continue their work when the supply of iron and steel from the United States stopped. At the end of 1917 many works were at a standstill and market quotations of shipbuilding shares had declined. Even more detrimental to Japanese prosperity than the embargo on iron and steel was the American embargo on the export of gold. The balance of trade between Japan and the United States was about $67,872,000 in 1916 in favor of Japan, and the prevention of the import of gold from the United States, to serve as payment for the balance of trade, affected unfavorably Japan's industry and trade in general. The great spinning industry in particular was affected, and then the depression spread to other industries. Prices began to go up and wages down, and large failures became common; so that at the end of 1917 Japan's three-year period of prosperity seemed to have little promise of continuation.

COMMERCE. The total volume of Japan's foreign trade in 1916 broke all previous records in both imports and exports. As a result of the utter disorder in the world's market's caused by the great war, imports and exports at first declined, but later Japanese commercial conditions improved. Despite various obstacles, such as scarcity of tonnage, extraordinary advance of freight rates, and the ban on imports enforced by the warring governments, Japanese exports continued to advance till they surpassed previous records in both 1915 and 1916. The table below shows imports and exports of merchandise, in yen:

	Foreign produce	*Japanese produce*	*Total*
Imports:			
1906.....	417,828,343	955,765	418,784,108
1911.....	512,942,169	863,536	513,805,705
1912.....	618,160.786	831.491	618.992.277
1913.....	728,626,129	805,515	729,431.644
1914.....	594,502.221	1,233,504	595.735.725
1915.....	529,667,911	2,782,027	532,449.938
1916.....	....	......	756,427,910
Exports:			
1906.....	4,570,015	419,184,877	423.754,892
1911.....	4,437,040	442,996,848	447,433,888

Exports:	*Foreign produce*	*Japanese produce*	*Total*
1912.....	2,366,921	524,614,921	526,981,842
1913.....	2,933,963	629,526,250	632,460,213
1914.....	4,304,166	586,797,295	591,101,461
1915.....	8,357,621	699,949,376	708,306,997
1916.....	......	....	1,127,468,118

Imports and exports of gold and silver bullion and specie have been as follows, in thousands of yen:

	1912	*1913*	*1914*	*1915*	*1916*
Imp.	11,544	1,021	9,107	24,297	101,030
Exp.	28,825	27,093	29,650	44,566	28,079

By great classes imports and exports of merchandise, in thousands of yen, were as follows in 1914 and 1915:

	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
Food, drink, and tobacco:				
Unmanufactured .	52,119	20,008	26,105	37,434
Manufactured ...	26,621	18,134	37,418	42,683
Raw materials.....	328,741	339,836	45,492	45,423
Materials partly manufactured .	96,253	98,377	306,360	323,401
Manufactures	87,249	51,473	167,890	242,867
Other products....	4,753	4,623	7,887	16,499
Total.........	595,736	532,450	591,101	708,307

Some of the leading imports in 1915 and 1916 respectively were valued as follows, in thousands of yen: raw cotton, 217,316 and 276,089; oil cake, 36,127 and 37,547; wool, 30,584 and 33,507; tinned plate and sheet iron, 12,762 and 33,162; iron bars, rods, etc., 5602 and 22,508; pig iron, 6549 and 13,794; sugar, 14,805 and 12,978; steam vessels, 2635 and 10,815; flax, hemp, jute, and China grass, 8423 and 9124; pulp for paper, 5975 and 9018; hides, 5909 and 8040; pig, ingot, and slab lead, 2910 and 7463; petroleum, 8464 and 5571; soy beans, 6812 and 4541; galvanized iron wire, 3175 and 4324; coal, 4458 and 4236; iron rails, 538 and 4203.

Leading exports in 1915 and 1916 respectively, in thousands of yen: raw silk, 152,031 and 266,929; silk tissue (habutae), 38,557 and 41,276; silk tissue (kaiki), 143 and 224; waste silk (kibiso), 4360 and 7505; waste silk (noshi), 1592 and 2975; silk handkerchiefs, 2733 and 4325; cotton yarn, 66,211 and 77,592; knit cotton undershirts and drawers, 10,718 and 28,834; gray shirtings and sheetings, 13,545 and 18,497; twilled tissues, 10,645 and 13,139; cotton flannel, 1877 and 6140; imitation, undyed nankeens, 5352 and 5961; cotton towels, 2045 and 3266; cotton crêpe, 1366 and 3099; table cloths, 1929 and 2898; ingot and slab copper, 44,264 and 66,119; matches, 14,717 and 21,103; refined sugar, 11,804 and 16,422; tea, 15,402 and 16,082; porcelain and earthenware, 6953 and 12,040; rice, 9677 and 11,197; iron and steel manufactures, 2946 and 9356; camphor, 3475 and 6288; sulphur, 2488 and 6216; European paper, 1709 and 5882; Japanese paper, 2541 and 3548; lamps and parts thereof, 2240 and 5097.

The table below shows imports and exports of merchandise by countries, in thousands of yen:

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
United States....	102,534	204,079	204,142	340,245
British India....	147,585	179,465	42,202	71,617
China	85,848	108,639	141,123	192,713
Great Britain....	58,084	81,732	68,494	102,658
Australia	28,571	43,338	18,098	27,776
Kwantung	27,819	33,954	22,201	37,060
Du. E. Indies....	16,312	14,228	8,439	17,419
Sweden	6,299	11,302	139	268
Straits Settlem'ts.	5,358	10,737	12,640	18,459
Philippine Islands	7,309	9,466	7,771	11,491
Egypt	6,136	8,332	985	5,388
Chile	2,999	6,091	170	927
Fr. Indo-China...	3,687	6,037	637	1,870
France	3,891	4,468	42,293	64,007
Germany	5,919	4,139	.....	.....
European Russia.	607	1,104	11,239	33,421
Asiatic Russia...	3,564	1,774	78,299	117,693
Norway	1,225	2,069	1	10,072
British America..	1,063	1,666	7,024	11,302
Hongkong	1,594	1,015	27,401	34,981
Hawaii	43	75	6,095	7,141
Total, incl. others	532,450	756,428	708,307	1,127,468

The share of some of the principal ports in the foreign trade is shown in the following table, in thousands of yen:

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
Kobé	269,216	374,099	197,598	331,105
Yokohama	140,351	209,738	305,954	497,653
Osaka	50,611	81,981	93,823	141,805
Moji	23,201	30,830	18,604	27,250
Nagasaki	7,830	14,102	4,640	9,936
Hakodate	899	816	4,791	4,952
Other ports....	...	44,862	....	114,762
Total	532,450	756,428	708,307	1,127,468

Shipping. There were entered from foreign countries in 1916 9562 steamers, of 20,363,518 tons, as compared with 8767 steamers, of 19,578,544 tons in 1915. The largest steam tonnage entered was in 1913, being 9888 vessels, of 24,658,874 tons. The number of sailing vessels entered from foreign countries in 1916 was 401, of 53,019 tons, as compared with 308, of 56,238 tons in 1915. Steam tonnage entered in 1915 and 1916 respectively was as follows: Japanese, 13,348,558 and 13,709,836; British, 3,881,922 and 4,417,631; Russian, 748,286 and 887,712; French, 225,704 and 322,116; American, 959,105 and 316,355; Norwegian, 29,246 and 205,049; Danish, 56,753 and 118,305; Swedish, 132,497 and 98,383; Chinese, 630 and 23,806; other, 195,843 and 264,325; total, 19,578,544 and 20,363,518.

The Japanese merchant marine was as follows, on December 31: in 1914, 3636 steamers, of 1,623,091 tons gross, and 14,552 sail, of 609,160 tons gross; in 1915, 3487 steamers, of 1,621,205 tons, and 17,498 sail, of 671,273 tons; in 1916, 3759 steamers, of 1,716,104 tons, and 20,301 sail, of 741,094 tons. The average capacity of steamers at the end of 1916 was 457 tons, and of sail 37 tons. The figures here given exclude sail under 5 tons. Sail of 20 tons and over numbered 9314 at the end of 1916; on the same date steamers of 20 tons and over numbered 2159, of 1,696,631 tons. Japanese shipping in the foreign trade receives government subsidy. At the end of 1916 there were 224 private shipyards and 61 private dry docks in Japan.

Communications. The extension of Japanese railways in recent years is shown below, the figures representing mileage open to traffic on March 31:

	1911	*1913*	*1914*	*1915*	*1916*
State	4,870	5,217	5,473	5,686	5,757
Private	485	768	1,121	1,445	1,744
Total	5,355	5,985	6,594	7,131	7,501

The figures above for private railway include those for light railways. Cost of construction up to March 31, 1916: state railway, 775,643,032 yen; private railway, 106,674,904 yen; total, 882,317,936 yen. In 1914-15, the total receipts and expenditure of the state railways were 112,169,616 and 97,927,049 yen respectively; in 1915-16, 120,212,355 and 95,989,137.

The railway systems of Japan are nationally owned and operated, the jurisdiction of the imperial government railways in the hands of the Imperial Railways Board created in 1908, being under the direction of the minister president of state. The purchase of railways by the state was begun soon after 1891, and in 1906 under subsequent legislation, a beginning was made of the purchase of seventeen private railway lines, so that by October, 1907, 2827 miles were acquired at a cost of $240,000,000. The nationalization of the railways then proceeded, and was marked by a phenomenal expansion of traffic, and an increase both in actual mileage and double track.

The railway systems of the empire are divided into five divisions, three for the main island and one each for the island of Kiushiu and Hokkaido. The annual surplus available for new extensions and improvements from earnings for six years up to 1917, averaged little more than $8,000,000 annually, but between $15,000,000 and $30,000,000 have been expended each year upon construction and improvement. The railways are operated on the narrow gauge of 3 ft. 6 in., which however, has been found undesirable, and several gauge committees, the last of which was formed in April, 1916, were appointed to deal with this question. The rails are mostly 60 pound or lighter, but renewals on the main lines were being made with 75 pound rails of American Society of Civil Engineers section. On most of the lines, single track predominates, but the Tokaido and other heavy trunk lines are double track with a few sections of four track.

The mileage of track in operation on December 31, 1915 were:

Single track	5,000 miles
Double track	734 miles
Through tracks	1 mile
Four tracks	16 miles
Six tracks	4 miles
Total main line................	5,755 miles
Yard and side tracks...............	2,277 miles
Total all tracks.................	8,840 miles

There were 1537 stations including all block stations.

On some of the mountain railways, electricity was employed and electrification had also been adopted for suburban service in and around Tokyo; a suburban service between Tokyo and Yokohama, a distance of 18 miles, had been operated since 1915, and plans were being made in 1917 to use electric locomotives to handle through trains on the Tokyo-Kobe line, within the city limits of Tokyo. The Japanese railways have block systems. The traffic returns for the year ending March 31, 1916, were as follows:

Item	*Year under review*	*Increase against preceding year*
Passengers carried..........	165,780,903	5,384,681
Tons of freight hauled......	35,231,896	338,787
Earnings from pas. traffic...	$30,117,000	$2,676,000
Earnings from freight traffic.	$30,446,000	$3,442,000
Total.................	$60,563,000	$6,118,000

The Japanese systems maintained ferry service between Japan proper and Korea, and the main island and the island of Shikoku and Hokkaido. Thirty-six steamers are in this service, and about 2,000,000 passengers and 800,000 tons of freight are handled annually. During 1917, a car ferry service was inaugurated as a connecting link between the main island and Kiushiu.

In 1917 the Imperial Japanese Diet authorized the expenditure of $4,980,000 for the extension of the Boryo and Giran railway lines in Taiwan. Of this sum $996,000 was to be expended annually for a period of five years, the railways to be completed by the end of the fiscal year 1921. Operations were to be begun before the close of the year and the construction contemplated was the extension of the Boryo Line from Ako to Boryo, and the extension of the Giran Line from Hatto to Suwo. The Giran extension, chiefly through mountainous country, was expected to aid the development of coal mining in Zuiho and Chosokei districts, where previously there had been great difficulty in getting the coal out.

Telegraphs March 31, 1916: officers, 5112; length of line, 10,536 ri (25,711 miles); length of wire, 47,556 ri (116,051 miles). Post offices on the same date, 7358.

Finance. The standard of value is gold. The monetary unit is the yen; its par value is 49.846 cents. For the fiscal year ending March 31, 1918, the budget balanced at 714,534,127 yen. The table below shows revenue and expenditure (ordinary and extraordinary) for fiscal years, in thousands of yen. The figures for the fiscal years 1914 and 1915 represent the settled accounts, those for the fiscal year 1916 the actual account on October 31, 1916, and those for the fiscal years 1917 and 1918 the budget estimates.

	1914	*1915*	*1916*	*1917*	*1918*
Revenue:					
Ord.	575,428	536,343	539,000	531,793	557,380
Extr.	146,547	198,306	169,616	69,145	157,154
Total...	721,979	734,648	708,616	600,938	714,534
Expenditure:					
Ord.	415,636	399,225	386,516	397,756	437,261
Extr.	157,998	249,195	196,753	204,507	277,273
Total...	573,634	648,420	583,270	602,263	714,534

As a sum of 1,324,575 yen was to be left unused of the total expenditure for the fiscal year 1917 in consequence of the disbursement of the special war expenditure, the net estimated expenditure amounted to 600,938,397 yen, thus balancing the revenue. As a matter of fact, however, it appeared in 1917 that the actual revenue for the fiscal year would greatly exceed the estimate. The estimated expenditure relating to the great war from its outbreak to the end of the fiscal year 1918 aggregated 329,000,000 yen.

The principal sources of ordinary revenue, as shown in the settled accounts of the fiscal year 1915 and in the budget for the fiscal year 1918, are as follows, in thousands of yen: public undertakings and state property, 135,830 and 176,347; tax on liquors, 95,782 and 89,875; land tax, 73,602 and 72,816; income tax, 37,157 and 36,881; cutoms duties, 44,229 and 31,654; stamps, 28,775 and 30,790; sugar excise, 23,385 and 25,174; business tax, 28,594 and 22,257; total ordinary revenue, including items not here mentioned, 536,343 and 557,380.

In the following table are shown by departments of government the budget estimates of expenditure for the fiscal year 1918, in thousands of yen:

	Ordinary	*Extraord.*	*Total*
Imperial Household	4,500	....	4,500
Foreign Affairs	4,583	2,171	6,754
Home Affairs	13,547	41,092	54,639
Finance	183,924	114,830	298,754
War	80,241	19,244	99,485
Marine	49,811	59,760	109,571
Justice	12,038	802	12,840
Public Instruction	9,812	2,101	11,913
Agriculture and Commerce	7,548	14,775	22,323
Communications	71,258	22,499	93,756
Total	437,261	277,273	714,534

The public debt outstanding March 31, 1917, was 2,467,701,938 yen, as compared with 2,489,234,428 yen in 1916 and 2,650;355,615 yen in 1911. In 1917, the foreign debt amounted to 1,370,207,560 yen, and the internal debt to 1,097,494,378 yen. Outstanding public debts, March 31, 1917, classified according to the objects for which they were incurred in thousands of yen: reorganization of public institutions, 97,669 (old public loan 1078; feudal pensions capitalized, 96,591); economic undertakings, 770,507 (railway construction, 728,106; harbor, drainage, road, steel works, mining, telephone, etc., 42,401); military affairs, 1,382,563 (expansion of armaments, 81,109; war, 1,301,454); financial adjustment, 124,428 (redemption of paper money, 10,642; conversion, 124,428; tobacco and salt monopoly, 13,329); exploitation of new territory, 92,535 (Formosa, 31,535; Korea, 61,000); total 2,467,702. See Financial Review; Prices.

Government. The legislative power is exercised by a parliament, or imperial diet, of two chambers, the House of Peers and the House of Representatives. The peers number 369, part of them having a seat in the parliament for seven years and part of them for life. There are 379 representatives, elected by popular vote for four years. The executive authority is vested in the emperor, who acts through a cabinet of ministers appointed by and responsible to himself. The emperor in 1917 was Yoshihito, who was born at Kyoto August 31, 1879, and succeeded his father, Mutsuhito, July 30, 1912. Heir apparent, Prince Hirohito, born April 29, 1901. The cabinet in 1917 (formed October 9, 1916) was as follows: Premier, Count S. Terauchi; Minister of Home Affairs, Baron S. Goto; Foreign Affairs, Viscount I. Motono; Marine, Vice-Admiral, T. Kato; War, Lieut.-Gen. K. Oshima; Communications, Baron K. Den; Agriculture and Commerce, R. Nakashoji; Justice, I. Matsumuro; Education, R. Okada; Finance, K. Shoda.

History. In January the opposition in parliament began a vigorous attack on the administration of Count Terauchi on the ground that the cabinet was formed in a manner contrary to the spirit of the constitution. The appointment of the prime minister in October, 1916, was criticized by Japanese political leaders as not supported by public opinion; it was supposed to be representative of the radical militarist element. Speeches criticizing him were delivered on January 23. On January 24 the enemies of the government introduced a resolution of lack of confidence and followed this up with sharp speeches attacking the arguments that the prime minister had advanced. The prime minister's contention was that the nation could be governed by a cabinet which did not have a majority in parliament. A sensational event occurred on January 25 when an attempt was made to assassinate the former minister of justice who in the course of an address at a mass meeting was denouncing the prime minister. Thereupon the house was dissolved and thus the chance for a vote of lack of confidence was lost. When the word was brought that the parliament was dissolved the members departed with loud protests.

In replying to the criticisms of January 23, the foreign minister, Count Motono, defended Japan's foreign policy. He assured the Allies of Japan's continued support. Friendship with the United States was also dwelt upon, and the minister expressed the imperial government's satisfaction at the increase of good will between the two countries. As to China, he declared that Japan had always united with the other Powers for the financing of internal reforms in China. He admitted, however, that China always showed a distrust of Japan. This he attributed to a tendency on the part of the Japanese to meddle in the internal quarrels of China, and he declared that the present Cabinet absolutely rejects this policy. He pointed out, however, the special interest of Japan in certain regions of China, notably Southern Manchuria and Eastern Inner Mongolia where she had made immense sacrifices and was entitled in consequence to the protection of rights and interests that had been guaranteed by treaties and agreements. At the same time Japan had no intention of overlooking the fact that the other Powers also had great interests in China.

Elections were held on April 20. The result of them was a victory for Count Terauchi and the military party, but the opposition declared that this success would not endure. It insisted that the alliance between Count Terauchi and the Seiyu-kai party was only for the time being.

The Cheng-Chiatung affair reported in the last Year Book which arose from a clash between the Chinese and Japanese troops in August, 1916, was the cause of prolonged negotiations between the two governments. A settlement was finally announced on January 23. According to this the military governor of Mukden was to apologize; the commander of the division which had been involved was to be reprimanded; and the officers directly concerned were to be punished. Compensation was to be given to the Japanese merchant who had been assaulted, and throughout Southern Manchuria a notice was to be posted to the effect that in dealing with the Japanese, whether civilians or troops, proper courtesy should be shown. Upon the fulfillment of these terms the Japanese troops were to be withdrawn from Cheng-Chiatung. Certain points, however, remained unsettled. In the first place, Japan's request for the appointment of Japanese instructors in the chief military school of China, and of military advisers at the military headquarters in Manchuria met the response that China could not at present agree to it; and the claim of Japan to the recognition of Japanese police-stations in Southern Manchuria and Eastern Inner Mongolia was refused; and the Chinese government declared its opposition to the course for which Japan argued in the matter of setting up additional police-stations in those places as they were required.

See STRIKES; UNITED STATES, *Foreign Relations.*

JAVA. See DUTCH EAST INDIES.

JEWS AND JUDAISM. Due to the war no census has been taken in the belligerent countries for several years, and consequently accurate figures of the number of Jews throughout the world are still unavailable. The figures quoted are based on returns from censuses taken, during the years preceding the war, mostly on those taken during the years 1913-14, and some go back to returns of the 1910-11 census. However, the Jewish Year Book, the available authentic source for Jewish statistics, gives in its last issue (1917-18) corrected statistical tables. They are: Total number of Jews in the world, 13,980,715, distributed among the continents as follows: Europe, 9,986,477; America, 3,094,309; Asia, 499,679; Africa, 380,805; Australia, 19,415. The European countries leading in Jewish population are: Russia (according to its former boundaries) with its 6,946,096, followed by Austria-Hungary with 2,258,262, Germany with 615,021, Rumania with 239,967, Great Britain with 257,000, The Netherlands 106,309, France with 100,000, Greece 88,300, and Turkey with 80,000. In American over 95 per cent of the total Jewish population are distributed in the three leading countries: United States with a Jewish population of 3,012,141, followed by Argentine with 110,000, and Canada with 75,681. In Asia, Turkey, 177,500, and Palestine 100,000, are the important centres of Jewish population. Morocco 110,000 and Tunis 108,000, hold the first places in the number of Jews in the continent of Africa. While these tables are greatly improved over those given last year, yet one can hardly claim them exact. There seems to be a grave discrepancy between the totals given for Europe and America, and the sums obtained by adding the numbers given for the various countries in the respective continents. The number of Jews in the Russian Empire was given in last year's issue as 6,060,415, while in this issue the number 6,946,096 is given, an increase of more than 800,000, which ought consequently to swell considerably the total for Europe, but, contrary to expectations, the total number of Jews in Europe is given about 2000 less than last year. The total for America is given as 3,094,309, while the detailed estimates for U. S. 3,012,141, Argentina 110,000, and Canada 75,000, aggregate considerably more than the total. In view of these facts, we may safely place the number of Jews throughout the world between 14,000,000 and 15,000,000.

GENERAL EVENTS. The outstanding feature in Jewish history in 1917 is the Russian revolution and its consequent effect, the emancipation of the 5,000,000 Jews within the present boundaries of the empire. The abolition of all restrictions, and the granting by the revolutionary government of full liberty and equality, has stirred up a new life in the down-trodden Russian Jewry. The participation of the Jews in all the social and political activities of the new democracy has been considerably great, beyond all proportion to their percentage of the population, but the real effect of the emancipation is to be seen in the inner life of the Russian Jewry. All social and cultural activities were carried on on a large scale, numerous conferences of various parties and organizations were held during the year, where plans of reorganizing Jewish life on national lines were discussed. Especially notable was the conference of representatives of all parties held at the end of July, at Petrograd, which decided to call, at the end of December, a congress representing all the Jews of Russia. In spite of the abolition of all educational restrictions, separate educational activity among the Jews has increased; a number of secondary schools and several colleges, notable among which is the Polytechnic Institute at Ekaterinoslaw, were opened. The purpose of these schools is to supply, in addition to general and technical education, also a certain amount of Jewish education, as well as to furnish the proper Jewish atmosphere for the students. Plans were also perfected and large sums collected for the establishment of a people's university and a temple of equality, at Kiev and Petrograd respectively, in commemoration of the Jewish emancipation. The economic situation, however, was not changed for the better but, on the contrary, due to the duration of the war and the chaotic conditions existing in Russia, poverty and misery have exceedingly increased. The number of those needing relief reaches in the hundreds of thousands, and is daily augmenting. The situation can hardly be controlled by the Russian Jews themselves without foreign help. Estimates formed by the relief officers in Petrograd show that at least twelve million roubles are necessary for the feeding of the refugees, and that Russian Jewry is able to raise only one-sixth of the amount.

Still worse is the economic situation of the Jews of Poland and Lithuania under German rule. The civil and political freedom granted them by the Imperial Council during the year has not alleviated their situation. Their rights exist only on the paper; the hatred of the Polish populace has not abated, and the economic boycott which was recently revived is working havoc on their economic situation. To aggravate matters, there were added the rigorous repressions of the German military rule, and the general economic ruin and devastation caused by the war, and, as a result, the Polish and Lithuanian Jewry has undergone great suffering, starvation, and its immediate consequences, epidemic diseases rage in every Jewish community. Yet the vitality of the Polish Jewry has asserted itself considerably, for all activity was carried on during the year. Numerous organizations were formed, notable among which is the Zeire Yehuda, a league of young laborers, for the purpose of counteracting the socialistic influence, and to promote the spread of Jewish knowledge among the members. Otherwise the Jewish situation remains statu quo. The echo of the Russian revolution was, however, heard even in Rumania, where the government announced its intention to grant full rights to the Jews. It is not known, though, to have realized its intentions.

RELIEF AND CONGRESS MOVEMENT. The cry of anguish from the stricken Jews abroad which grew louder and louder as the war continued, has stirred the Jews of this country to more intensive relief activity during this year. Early in the year, the sum of $10,000,000 was set up at a conference of relief workers, as the goal to be reached by them. The week of January 27, commemorating the proclamation issued by President Wilson in 1916, was set aside as a week of mercy, during which an energetic drive for funds was made. To stimulate activity in collecting money, Julius Rosenwald announced, on March 12, his offer of $100,000 for every million raised by the people. But as the year wore on, activity slackened and at the end of November, only half of the sum was raised. It was then that Jacob H. Schiff stepped in and initiated, with the help of the most leading Jews of the country, a two weeks' (December 3-15) drive for $5.000,000, $1,000,000 of which was to go to the Jewish Army Welfare Board, and it was crowned with complete success. On December 16, he announced that not only was the desired sum raised, but also a considerable amount above it.

The congress movement reached its culmination, when the executive committee decided early in April that an election of delegates should be held on June 10, and the congress itself on September 2. An election board to take charge of the matter was appointed, and the country divided into districts, and the number of delegates apportioned. Nominating conventions were held on the tenth of May, and election a month later. About 350,000 Jews all over the country participated in the election, political feeling ran high, and party lines were greatly differentiated; the bulk of the participants consisted of orthodox and nationally inclined laborers, the reform Jews and the extreme radicals having withdrawn from the congress committee. The congress, however, was not held on the scheduled date. Due to war conditions, it was deemed advisable to defer its session until after the war. The congress movement had spread also to other countries. Conferences preparatory to holding congress were held by the Jews in Italy, Greece, and Russia (see previous section).

LABOR AND LEGISLATION. The year in the Jewish labor world passed rather quietly. It was not marked by any great strikes, such as the cloakmaker's strike of last year. Labor gave vent to its activity in the political field, rallying behind the candidacy of Morris Hillquit, for Mayor of the City of New York. The clothing industry, the centre of Jewish labor, had, however, its usual quota of disturbances in the form of minor and local strikes in the unimportant branches of the industry, which were adjusted by various methods.

The important feature in legislation affecting Jews was the final passing by Congress, over the president's veto, of the literacy test for immigrants, striking out the previously inserted clause exempting Russian Jews from the test on account of their educational disabilities. To the minor legislative events may be counted the passing by the Colorado Legislature of a bill, prohibiting discriminating advertising by hotels, and the defeat of a bill introduced in the Legislature of Arizona, providing for reading of the Bible in public schools.

PERSECUTION AND DISABILITIES. The year, in spite of its bright political events, was not at all clear from dark spots in the form of persecutions. Russia, the traditional home of persecution, led in this respect. Pogroms on the Jews were still being perpetrated in many provincial towns. The black hundred and the reactionaries, though shorn of their power, had, recently, due to the chaotic conditions reigning in Russia, succeeded in inciting the populace in many cities and towns against the Jews. Specially distressing reports came of late from the province of Podolia, southwestern Russia, where pogroms occurred almost daily. The government, however, endeavored to repress the movement. Palestine was this year, on account of the English invasion, the scene of extreme Jewish suffering. The Jews were expelled from Jaffa and Jerusalem, and their houses sacked. A similar fate was also suffered by Tel-Abib, the beautiful Jewish town, near Jaffa. No serious disabilities were enacted in any country against the Jews, but the social disability of the boycott is aggravating the Jewish situation in Poland.

LITERARY AND MINOR EVENTS. Literary activity during the year was at a standstill in this country; no new additions to the Jewish-English, Yiddish, or even the Hebrew press are to be noted. The most important book issued this year is the new translation of the Old Testament, issued by the Jewish Publication Society. On the other hand, a strong literary revival was marked this year in Russia. The emancipation has stimulated great literary activity in Hebrew and Yiddish. A new Hebrew daily under the name of *Haam* (the people) was established, and the Hebrew scientific monthly, *Hashiloah*, reappeared again. Sums aggregating to two million rubles were raised for the purpose of establishing a company, by the name of Sephoténu (our language), to issue books, magazines, and dictionaries. The lovers of Hebrew and Yiddish literature throughout the world mourned the loss of Dr. J. L. Katznelbogen, a noted Hebrew essayist, and Shalom Jacob Abramowitch, known to the Jewish world under the pen name of Mendele Mocher Sephoreim, a distinguished Hebrew satirist, and a still more distinguished Yiddish writer. He was known as the grandfather of Jewish and Hebrew literature. Jewish and Semitic science sustained the loss of Prof. Joseph Halevi, of Paris, Hebraist and Orientalist, and that of Baer Ratner, of Wilna, a great Talmudist and historian.

An important event for Judaism in this country was the establishment of the Mizrachi Teachers' Institute by the Mizrachi organization, the orthodox branch of the Zionists at New York, for the training of modern Hebrew teachers. Of minor events there can be recorded the seventy-fifth anniversary of the Congregation Rodeph Shalom of New York, and that of B'nai Jeshurun of Cincinnati, Ohio, and the twenty-fifth anniversary of the American Jewish Historical Society.

ZIONISM AND NATIONALISM. An event of momentous importance is the history of the Zionist movement during the year, was the declaration of the English Government in favor of establishing a Jewish home in Palestine. This event followed immediately by the capture of Jerusalem foreshadows the speedy realization of the Zionist ideal. A conference of important Zionist workers was called by the provisional committee at Baltimore, on December 16, where it was decided to raise a million dollar fund for the purpose of sending a commission of scientists and noted Zionist leaders to investigate the conditions of the land. The year on the whole was marked with intense Zionist and national activity throughout the world, especially in Russia, where the Zionists held a conference of representatives for the first time in years. Three important conventions, that of the Mizrachi, the orthodox branch, the order Sons of Zion, and the Federation of American Zionists, were held in the United States during the months of May, June, and July, respectively, and all three were attended by hundreds of delegates. Zionist activity was also carried on in all other countries, neutral and belligerent, and Jewish nationalism had become the order of the day in Jewish life.

JOFFRE, JOSEPH J. C. See UNITED STATES AND THE WAR.

JOHNS HOPKINS UNIVERSITY. A nonsectarian educational institution which admits men and women to some of its courses and to others men only, situated at Baltimore, Md. It is known principally for its graduate study. In the fall of 1917 there were 2178 students and 330 members of the faculty. Volumes in the library numbered 200,000. William H. Welch, professor of pathology since the professorship was established, resigned in 1917. William George MacCallum, professor of pathology at Columbia University, succeeded him. Elmer V. McCollum, of the University of Wisconsin, was made professor of chemistry. Murray P. Brush was made dean of the college faculty, and Edward W. Berry, formerly associate professor, was made full professor of paleontology. William Bullock Clark, professor of geology, died; Professor Edward C. Armstrong, professor of the French language, left to become professor of French at Princeton; James E. Shaw, associate professor of Italian, left to become professor of Italian in the University of Toronto. Maj. George R. Gould, U. S. A. (retired), was made collegiate professor of military science and tactics. The General Education Board added $100,000 to the William H. Welch Endowment for Clinical Research in order to make possible more work in the department of pediatrics, and gave also $250,000 to strengthen the work in the laboratory departments of the Medical School. The total of the university's net assets, including equipment, etc., was reported by the treasurer to be $10,785,067, of which $3,670,665 is represented by plant, equipment, and unrestricted bequests, etc. The total income from operations for the year ending September 30, 1917, was $709,315. The university was founded in 1876. President, Frank J. Goodnow, LL.D.

JOHNSON, JOHN GROVER. A leading American lawyer and art collector, died in Philadelphia April 14, 1917. The son of a blacksmith, he was born at Germantown, Pa., in 1841, and at seventeen graduated from the Central High School of Philadelphia. Afterward he studied law in the office of Benjamin and Murray Rush and in that of Power, Wallace, and Judson, and practiced in Philadelphia from 1863 till his death. Mr. Johnson came to be recognized as one of the foremost men in his profession not only in the United States, but on either side of the Atlantic. Baron Palles, Lord Chief Justice of Ireland, called him the "greatest lawyer in the English-speaking world." His high place was not realized by the public because Mr. Johnson consistently refused offices that would have brought him into notice. Twice he declined appointment to the bench of the United States Supreme Court, when tendered by Presidents Garfield and Cleveland, and President McKinley urged him to be attorney-general in his cabinet. He gained his reputation almost entirely as a corporation lawyer, and his advice was often sought by the late J. Pierpont Morgan and other big financiers and capitalists. Before the United States Supreme Court he defended the Sugar Trust, the American Tobacco Company, the Standard Oil Company, and the Northern Securities Merger, and as counsel for other large interests he appeared in both State and Federal courts. Mr. Johnson apparently had no interest in public movements, club life, or even organizations of his professional brethren, and he is said to have refused to join the American Bar Association. Mr. Johnson's one great recreation was in surrounding himself with pictures, of which he had one of the finest collections in the United States. He did not need to rely on buyers, for he had early made himself an expert, and went abroad nearly every year to make his own selections. He gathered valuable examples of the old and modern masters, and of many little known painters whose work received his critical approval, the whole forming a chronological record from the early fourteenth century. His most important picture, almost priceless, was Correggio's "Holy Family." Mr. Johnson was essentially a lover of pictures for their own sake, although he knew their monetary worth, too; instead of relegating them to a gallery, he used them, some 1800 in all, to cover not only the walls but the doors throughout his home. He had wished the city of Philadelphia to acquire the famous Elkins and Widener collections and to build a great gallery for them and the Wilstach collection, to which he would add his own. This plan was not followed, but at his death Mr. Johnson left his house and the collection, valued at more than $5,000,000, to the city. His gift was one of the largest of the sort ever made to the public. In 1910 he published an elaborate three-volume catalogue of the collection. Consult New York *Evening Post*, April 19, 1917.

JOHORE. A native state located at the southern extremity of the Malay Peninsula and under British control. Estimated area 900,000 square miles; population (1911), 180,412, about half Malays and one-third Chinese. Johore Bharu, the capital, has about 20,000 inhabitants. Imports and exports (1915) 9,163,665 and 28,017,800 Straits Settlements dollars. Revenue and expenditure 1915, 5,790,393 and 3,645,421 dollars; public debt, 6,750,000 (for railway construction). A railway, constructed by the Federated Malay States Railways, connects

Kuala Gemas on the Negri Sembilan border with Johore Bharu (120½ miles).

JUGOSLAVS, or YUGOSLAVS. A term denoting the southern Slavic nations; from *jug* (*yug*), the word for "south" in most Slavic languages, and *Slav*. Properly speaking, the Jugoslavs are the Slovenes, Serbocroatians (embracing the Montenegrins), and Bulgarians. The latter, however, owing chiefly to their peculiar political orientation, are not commonly included in the designation of Jugoslavs.

JUPITER, SATELLITES OF. See ASTRONOMY.

JUVENILE COURT. Within the past decade special courts for the hearing of cases of prosecution of children for the violation of law and ordinances have been established in all principal American cities and in various countries abroad. More recently the process of extending them to counties so as to bring their advantages within reach of rural communities has met with marked favor. These children's courts provide for private hearings by the judge alone in place of trial by jury and newspaper publicity; they afford a chance to apply the newer theories of penology, especially individualized treatment. In connection with them has developed the probation system (see PENOLOGY), and in the last two or three years psychopathic clinics for the study of mental abnormality and expert medical service for the study of physiological and functional disturbances. Finally these courts are bringing into existence special schools for the instruction and training of delinquent boys and girls. There was evident in 1917 an increasing emphasis on the desirability of connecting juvenile courts with courts of domestic relation and other agencies dealing with broken and disorganized family life on the ground that problems of juvenile delinquency are intimately connected with the character of home life and the broader questions of poverty and degeneracy. See CHARITIES and PENOLOGY.

The New York City Children's Court first organized as a separate court in 1916 and issued its first report in the fall of 1917. In this the presiding justice, Franklin C. Hoyt, showed that, in spite of a decrease in the number of arrests, there was an increase in the number of hearings, indicating more careful attention to individual conditions. The probation bureau established with the court had fifty-five salaried officers; in consequence of their activities, a number of commitments to institutions had been reduced from 6682 in 1912 to 2893 in 1916. It was estimated that this saved the city an annual maintenance charge of over $238,000. There were arraigned in 1916 over 12,400 children, of whom 84 per cent were up for the first time, 11.4 per cent for the second time, 3.1 per cent for the third time and 1.5 for the fourth time or oftener.

Characteristic of the scientific work now frequently done in connection with juvenile courts was the report of Mabel B. Ellis on child labor and juvenile delinquency published in the November *Child Labor Bulletin*. She studied 1792 children of ages 7 to 16 who had been convicted of offense against State or city laws. Although only 10 per cent of the children of Manhattan of these ages are employed, 40 per cent of the offenders were workers. This larger proportion of workers among offenders was especially true for the more serious crimes. Employment was found to be more likely to result in delinquency than age, lack of schooling, nationality, or home condition. More effective enforcement of school attendance laws, vocational education, and guidance were recommended.

KAISER-WILHELMSLAND. The northeastern part of the island of New Guinea, constituting the major portion of the protectorate of German New Guinea. On the west (at long. 141° E.) it is bounded by Dutch New Guinea, and on the southwest and south by Papua (British). The number of inhabitants is not definitely known, but may be estimated at about 400,000. The country, over which Germany declared a protectorate in 1884, has been under Australian military administration since October, 1914.

KAMERUN. A German protectorate of west central Africa, lying between Nigeria (British) and French Equatorial Africa and extending north to Lake Chad and east, at one point, to the Ubangi River. The coast line is broken by the comparatively small Spanish colony of Río Munig y Cabo San Juan (Spanish Guinea). The estimated area is 305,019 square miles, which is nearly as large as the combined area of Montana and the Dakotas. The colored population has been estimated at 3,651,000. On January 1, 1913, whites numbered 1871, of whom 1643 German. The German administrative headquarters was Buëa. The protectorate was established by Germany in 1884. According to the Franco-German treaty of November 4, 1911, the area of the protectorate was increased by about 100,000 square miles. On August 25, 1914, a British force advanced across the border, and the conquest of the protectorate was completed by French and British troops on February 18, 1916. The portion of French Equatorial Africa which was annexed to Kamerun under the treaty of November 4, 1911, is administered by the governor-general of French Equatorial Africa as commissioner-general; the rest of the protectorate is administered by the government of Nigeria.

Imports and exports in 1913 were valued at 34,616,000 and 29,151,000 marks respectively, about two-thirds of the trade being with Germany. Leading imports include machinery and other manufactures of iron and steel, cotton piece goods, rice, provisions, and fish. The larger exports in 1913 were: rubber, 12,122,000 marks; palm kernels, 6,226,000; cacao, 5,718,000; palm oil, 1,961,000.

Railway in operation at the end of 1913, 193 miles; under construction, 83 miles. The budget for 1915-16 balanced at 32,490,409 marks, estimated local receipts being 14,094,091 marks, imperial contribution 3,166,318, and loan 15,230,000.

KANSAS. POPULATION. The population of the State in 1910 was 1,690,949, and on July 1, 1917, it was estimated to be 1,851,870.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	9,156,000	128,184,000	$160,230,000
	1916	6,950,000	69,500,000	62,550,000
Wheat ...	1917	3,757,000	45,934,000	90,950,000
	1916	8,170,000	97,980,000	160,687,000
Oats	1917	2,284,000	70,804,000	45,315,000
	1916	1,550,000	36,425,000	20,034,000

		Acreage	*Prod. Bu.*	*Value*
Potatoes	1917	78,000	4,446,000	6,758,000
	1916	70,000	4,970,000	8,200,000
Hay	1917	1,478,000	a 2,217,000	36,802,000
	1916	1,680,000	2,604,000	19,790,000

a Tons.

Mineral Production. The lead and zinc mined in the State in 1916 was valued at $3,563,488. There were produced 2217 short tons of lead concentrates, and 24,277 short tons of zinc concentrates. The total crude ore in which the lead and zinc were produced amounted to 774,400 short tons. The petroleum production of the State in 1915 was 2,823,487 barrels compared with a production of 8,738,077 barrels, valued at $10,339,958 in 1916. This is an increase of 209 per cent in quantity and 507 per cent in value. The production of coal in 1916 was 6,881,455 net tons, valued at $12,252,723, an increase of less than 1 per cent in quantity but of 9 per cent in value over 1915. The production of natural gas in 1916 was valued at $4,855,389 compared with $4,037,011 in 1915.

Transportation. The total number of miles operated in the State on June 30, 1916, was 9557. The roads having the longest mileage were: The Atchison, Topeka, and Santa Fe, 2815; Missouri and Pacific, 2384; Chicago, Rock Island, and Pacific, 1167. Union Pacific, 216.

There was no railroad construction of importance during the year.

Finance. According to the report of the State treasurer for the fiscal year of 1917 the total receipts were $12,347,683; expenditures $12,299,176. At the beginning of the year the balance in the treasury was $1,686,215 and at the end of the year $1,734,722. The State has no bonded debt.

Education. The total school population in the State in 1915, the latest date for which statistics are available, was 507,605. The total enrollment was 394,823, with an average daily attendance of 308,016. The teachers, male and female, numbered 15,015. The average monthly salary of teachers, male, $85.70; female, $68.20.

Charities and Corrections. The charitable and correctional institutions of the State include the Topeka State Hospital, the Osawatomie State Hospital, the State Hospital for Epileptics, the Home for the Feeble-minded, the State Orphans' Home, the Larnard State Hospital, and the Tubercular Sanatorium.

Legislature. Among the more important measures passed by the legislative session of 1917 are those noted below. The laws relating to the administration of State government were amended. A city manager plan of government was adopted. A constitutional amendment was proposed to take away the right of suffrage now granted to aliens who have declared their intention of becoming citizens. A scheme of double election boards; one to receive the ballots and another to count them, was adopted. A general prohibition law was enacted. A law relating to labor disputes was amended. A "vagrant" is defined as "any person who shall threaten violence or personal injury to fellow workmen or employers of labor." The use of safeguards, approved by the council of labor, is required for the protection of employees. The eight hour day for men is extended to miners. The child labor law was amended in some details. A commission was appointed for investigating the conservation and utilization of water resources and of controlling waters in floods. An act was passed making it unlawful for any railroad or common carrier to receive live stock for shipment unless the shipper is identified by at least two responsible persons, or is known to the railroad agency. The State board of health is authorized to make rules for quarantining in certain infectious diseases. On July 1, the administration of over a score of State institutions passed to a board of three men appointed by the governor.

State Officers. Governor, Arthur Capper; Lieutenant-Governor, W. Y. Morgan; Secretary of State, J. T. Botkin; Treasurer, Walter L. Payne; Auditor, Fred W. Knapp; Attorney-General, S. M. Brewster; Superintendent of Instruction, W. D. Ross; Commissioner of Insurance, C. J. Wilson—all Republicans.

Judiciary. Supreme Court: Chief Justice, Wm. A. Johnston; Associate Justices, Rousseau A. Burch, Henry F. Mason, Silas Porter, Judson S. West, John Marshall, and John S. Dawson; Clerk, D. A. Valentine.

KANSAS, University of. A co-educational State institution of learning at Lawrence, Kans. In the fall of 1917 there were 2613 students and 219 members of the faculty; about 20 additional members of the faculty were absent on leave for government service. Volumes in the library numbered 112,000. A bequest of $30,000 from the late J. L. Porter of Paola, Kans., was received in 1917. Total income for the year, principally from State appropriations, was $692,500. The legislature also appropriated $112,500 for new buildings and $35,000 for repairs and improvements. The university was founded in 1866. President, Frank Strong, Ph.D., LL.D.

KARAFUTO. A Japanese dependency, being that part of the island of Sakhalin which lies south of latitude 50° N. The area is stated at 2208.9 square ri (34,069 square kilometres, or 13,154 square miles). This area is nearly equal to the combined extent of Massachusetts and Connecticut. The population as calculated for the end of 1916 was 95,194 (53,773 males, 41,421 females), as compared with 73,795 and 57,206 at the end of 1915 and 1914 respectively. The 1914 population consisted of 2078 indigenes, 54,984 Japanese, and 144 foreigners. The Japanese government encourages migration to Karafuto.

It is reported that in the principal localities there are more than 438,000 cho (1,073,000 acres) of land suitable for cultivation and pasturage. At the end of 1916, 8088 cho (19,821 acres) were under cultivation. The chief products at present are wheat, buckwheat, barley, oats, peas, rape, potatoes, hay, and vegetables. Karafuto, unlike other parts of the Japanese empire, is heavily forested. The total forest area is stated at 3,352,712 cho (8,216,223 acres); of this, 2,104,462 cho (5,157,237 acres) are under conifers and 473,750 cho (1,150,981 acres) under broad-leaved forest; the remainder consists of mixed conifer and broad-leaved forest (361,898 cho) and thinly stocked and blank areas (412,602 cho). Most abundant among the conifers are fir (todo-matsu), spruce (ezo-matsu), and larch (Karafuto-rakuyosho). Important among the broad-leaved trees are white birch and elm. The government has begun the exploitation of these forests. The fir and spruce are suitable for building and industrial purposes and also for the manufacture of wood pulp. About 40,000 tons of pulp are produced annually, and it is expected that new manufactories in the near future will increase the output to 100,000 tons. Broad-leaved trees are utilized in the production of charcoal, wood tar, calcium, acetate, and betulin oil. The principal mining product of Karafuto is coal, next to which come alluvial gold, petroleum, and iron pyrites. An important industry at present is herring fishing. In 1913, imports were valued at 5,202,605 yen, and exports at 4,371,970 yen; in 1914, 4,756,603 and 4,604,365.

Revenue and expenditure in the fiscal year 1914-15 were 2,265,224 and 2,073,933 yen respectively. For 1916-17, the budget balanced at 2,218,559 yen; for 1917-18, estimated revenue, 2,692,728 yen and estimated expenditure, 2,437,452 yen.

KATTE, WALTER. An American civil engineer, died in New York City, March 4, 1917. He was born in 1830 in London, England, was educated there at King's College School and in an engineer's office, and came to the United States in 1849, soon afterward entering railway service. The years 1857-58 he spent as resident engineer of State canals in Pennsylvania. During 1861-62 he was in the service of the United States Military Railroad and Telegraph Department as constructing engineer (with rank of colonel) of military bridges and railroads in Maryland, the District of Columbia, and Virginia. Between 1865 and 1875 he was engineer, secretary, and general western agent for the Keystone Bridge Company of Pittsburgh, and he spent four years supervising the construction of the Eads steel arch bridge across the Mississippi at St. Louis. As first chief engineer of the New York Elevated Railroad, Col. Katte helped build the Second Avenue and Ninth Avenue lines in 1877-80. During the next six years he had charge of the construction of the West Shore road, and from 1886 till his retirement in 1899 he was chief engineer of the New York Central and subsidiary lines. Of the Western Society of Engineers, which he helped to found, he was made an honorary member, and he was prominent in London engineering circles. His son, Edwin B. Katte, became noted as an electrical engineer and traction expert.

KENTUCKY. POPULATION. The population of the State in 1910 was 2,289,905, and on July 1, 1917, it was estimated to be 2,394,093.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn ...	1917	3,900,000	122,850,000	$148,648,000
	1916	3,400,000	95,200,000	82,824,000
Wheat ..	1917	750,000	9,000,000	19,080,000
	1916	890,000	8,010,000	13,297,000
Oats	1917	810,000	8,060,000	6,126,000
	1916	300,000	6,300,000	3,780,000
Potatoes .	1917	70,000	6,720,000	9,408,000
	1916	49,000	4,116,000	5,845,000
Hay	1917	975,000	*a* 1,268,000	25,740,000
	1916	1,080,000	1,512,000	19,051,000
Tobacco .	1917	474,000	*b* 426,600,000	96,838,000
	1916	484,000	435,600,000	55,321,000

a Tons. *b* Pounds.

MINERAL PRODUCTION. The coal production of the State in 1916 was 25,393,997 tons, valued at $30,193,047, an increase compared with 1915 of 4,032,323 tons, or 19 per cent in quantity, and of $8,699,039, or 40.5 per cent in value. The chief increase was in the eastern part of the State, and was largely in the by-product and gas coals, but it was shared by the domestic and steam coals also. The production of lead and zinc in 1916 was valued at $314,842 compared with $213,066 in 1915. The shipments of galena concentrates amounted to 227 tons, valued at $16,868, compared with 370 tons valued at $17,103 in 1916. There were also shipped in 1916, 3048 tons of zinc concentrates, valued at $132,282, compared with 2172 tons in 1915 valued at $106,079. The output of petroleum in 1916 was 1,202,569 barrels valued at $2,188,295, compared with 437,274 barrels in 1915, valued at $418,357, increase of 175 per cent in quantity and 423 per cent in value.

RAILWAYS. The total railway mileage in the State in 1916 was 4027.

FINANCE. The report of the State treasurer shows a balance in the treasury on July 1, 1916, of $1,070,214. The receipts of the year amounted to $9,251,168, and the disbursements, $9,121,154, leaving a balance in the treasury on June 30, 1917, of $1,200,229.

EDUCATION. The total school population in 1917 was 740,576. The enrollment in the public schools was 555,568, with the average daily attendance of 344,112. There were 4621 male teachers and 8852 female teachers. The average monthly salary of teachers in the rural schools was $42.42.

The total expenditure for school purposes during the year was $142,484.

CHARITIES AND CORRECTIONS. The State Board of Control administers the charities and corrections. These include the Eastern State Hospital at Lexington, Central State Hospital at Lakeland, Western State Hospital at Hopkinsville, and the Feeble-minded Institute at Frankfort.

POLITICS AND GOVERNMENT. Early in January, a mob attempted to lynch a negro accused of murder, near the village of Murray. Their efforts were frustrated by Judge Bush, and by State Attorney Smith, who called out a large force of deputy-sheriffs. The mob, in revenge, attempted to blow up the hotel at which the judge and attorney were staying. As soon as Governor Stanley had been informed of the trouble, he chartered a special train, and reached Murray on January 11. After appealing to the people, to support the laws of the State, he succeeded in quieting the mob.

On November 5, the United States Supreme Court handed down a decision declaring a race segregation ordinance, passed by the Louisville city government in 1914, unconstitutional. This ordinance forbade persons of either the white or black race from moving into resident blocks in which the majority of the inhabitants were of the opposite color. The court admitted the law providing for race segregation in public conveyances had been upheld, provided that equal facilities were given to both races; but denied that the case in question was a parallel one. Other cities in the South have passed similar laws and this decision has the effect of nullifying these also. At the election of November 6, 1917, there was no candidate in opposition to Charles Morris, Democrat, for Attorney-General. In Louisville, George W. Smith, R., was elected mayor over Charles H. Cronan, D.

STATE OFFICERS. Governor, Augustus O. Stanley; Lieutenant-Governor, James D. Black; Secretary of State, James P. Lewis; Treasurer, Sherman Goodpaster; Auditor, Robert L. Greene; Attorney-General, Charles Morris; Superintendent of Education, V. O. Gilbert; Commissioner of Agriculture, M. S. Cohen—all Democrats except Lewis, Republican.

JUDICIARY. Court of Appeals: Chief Justice, Warner E. Settle; Associate Justices, Shackelford Miller, F. D. Simpson, John D. Carroll, Ernest Clarke, Gus Thomas, Rollin Hurt; Commissioner of Appeals, W. R. Clay; Clerk, R. W. Keenan.

STATE LEGISLATURE. Joint ballot: Dems., 86; Reps., 53. Constitutional amendment won by 19,778 votes.

KENTUCKY, UNIVERSITY OF. A co-educational State institution of learning at Lexington, Ky. In the fall of 1917 there were 734 students and 78 members of the faculty; 110 students were in government service in 1917 and 8 members of the faculty. Volumes in the library numbered 33,869. The university was founded in 1866. In 1917 Frank L. McVey was elected president to succeed Henry Stites Barker, and Thomas P. Cooper was elected dean of agriculture and director of the experiment station.

KERENSKY, ALEXANDER. Former premier and dictator of Russia. He was also president for a short time of the Russian Republic set up by the revolution. His rise to power was very rapid. Before the overthrow of the czar he was scarcely known outside of a small group of the Labor party in Petrograd. Kerensky was born at Simbirsk, where his father was the principal of a high school. He was educated in that town and at Tashkent, later being graduated from the University of Petrograd in law. After his graduation he became assistant to the commisioner of oaths at Petrograd and later held the office himself. As a lawyer he specialized in political prosecutions, taking the cases of persons who had been imprisoned for violation of the autocratic rules of the Russian government. His pleas attracted attention to him, and as a result of this local fame he was elected to the Fourth Duma. He became a leader of that body chiefly on account of his ability as an orator. He was in close touch with the revolutionary workmen, who in March began to feel the hunger caused by the inefficiency of the Russian transportation system. For an account of his activities during the course of the Russian Revolution, see RUSSIA, *History*, and WAR OF THE NATIONS, ***Military*** *Operations*.

KERN, JOHN WORTH. An American statesman and lawyer, born at Alto, Ind., on December 20, 1849; died on August 17, 1917. His parents moved to Iowa when he was a small child and they lived the usual life of a pioneer. He attended the local schools of Kokomo, Ind., and was graduated from the law school of the University of Michigan in 1869. He was admitted to the bar in the same year, and almost immediately began an active participation in Democratic politics, although the county in which he lived was a Republican stronghold. He was a candidate for the State Legislature before he was twenty-one years old. Later he became city attorney for Kokomo for six terms. In 1884 he was elected reporter of the Supreme Court of Indiana and served four years. For more than twenty-five years he took part in every State and national campaign in Indiana and his services as a speaker were in great demand. In 1892 he became a member of the State Senate, where he served for years and where he became the leader of his party.

In 1900 he was chosen Democratic candidate for governor, but was defeated by Col. W. T. Durbin. In 1904 he was again defeated for the governorship. In 1905 he received the vote of his party for United States senator. In 1908 he received the Democratic nomination for the vice-presidency, in which year he ran with William Jennings Bryan. His friendship with Bryan began in 1896, when, after opposing free silver, Mr. Kern accepted the decision of the Democratic convention. From that time he was a Bryan man in all the fights in his party. In 1909 he was a candidate for the United States senatorship, but the Democrats nominated B. F. Shivley on a secret ballot. In 1911, his party having gained control of the legislature, he was nominated and elected to the United States Senate and served until 1917. The unsuccessful Republican nominee was Beveridge. In the Democratic national convention of 1912 he represented Indiana as a delegate and at first supported Marshall, but finally came out for President Wilson. In 1913, when the Democrats got control of the Senate he became floor leader and filled the position with a great deal of ability.

KIAOCHOW. A German protectorate on the east coast of the Chinese province of Shantung. The area, exclusive of the bay, is 213 square miles. The population, as stated by the German authorities before the great war, was about 195,000, including about 187,000 Chinese and (January 1, 1913) 4470 whites, of whom 4256 German. In 1915, Japanese residents, exclusive of the military, numbered about 9300. The port and chief town is Tsingtao. Kiaochow was seized by Germany in November, 1897: leased by Germany from China for 99 years from March 6, 1898, and declared a German protectorate April 27, 1898. On August 27, 1914, Japan began the blockade of Tsingtao, which surrendered to Japanese and British forces on November 7 following. Kiaochow has since been administered by the Japanese.

Imports and exports (including hinterland trade passing through Tsingtao) were valued at 121,254,000 and 79,640,000 marks respectively in the year ended September 30, 1913.

In the over-sea trade, imports and exports in 1915 were valued at $2,620,242 and $1,998,092 respectively; in 1916, $11,808,815 and $13,547,355. In 1916, imports from Japan amounted to about 78 per cent of the total, and exports thereto to about 95 per cent.

The principal imports include cotton, cotton piece goods, cotton yarn, metals, paper, sugar, and matches. The larger exports in 1913 were: straw braid, 17,590,000 marks; peanuts, 11,382,000; Shantung pongees, 8,009,000; yellow silk 7,507,000; peanut oil, 7,187,000; raw cotton, 5,612,000. The Shantung Railway, with 270 miles of track, extends from Tsingtao to Tsinan, capital of Shantung, with a branch from Changtien to Poshan.

KITCHIN, Claude. See United States, *Congress.*

KNEISEL QUARTET. See Music, *Chamber Music.*

KOCHER, Theodore. Dr. Theodore Kocher, a famous Swiss surgeon, who won the Nobel Prize for Medicine in 1909, died at Berne on August 1, 1917. He studied medicine at Berne and surgery at Berlin, Paris, and London. He became connected with the university at Berne after 1866, and in 1872 became director and professor of the surgical clinic. Dr. Kocher was the first surgeon, it is said, to operate successfully for goitre. He had hundreds of patients from all parts of the world, among them American tourists who visited Berne before the war. Dr. Kocher's treatment for goitre consisted in withdrawing from functional activity part of the thyroid gland in the neck. This was accomplished by removing the lobes of the gland or by tying off its blood supply. In 800 cases of exophthalmic goitre treated it was reported that 70 per cent had been cured. His later work included transplanting the thyroid gland, study of cancer of the thyroid, and curability of cancer of the stomach; he also described tumors of the hypophysis (pineal gland) and the prevention of cretinism. At the outbreak of the European War Dr. Kocher presented the European armies with a preparation which he called "coagulum," the results of his own study. It was to be carried by the soldier to stop the flow of blood when wounded. He wrote: *Die antiseptische Wundbehandlung; Vorlesungen über chirurgische Infectionskrankheiten,* with Tavel; *Encyklopädie der Chirurgie,* with Quervain. His *Chirurgische Operationslehre,* which is to be had in English as *Textbook of Operative Surgery,* is considered one of the most authoritative books on the subject.

KOREA, or Chosen. A Japanese dependency in eastern Asia, occupying the peninsula between the Yellow Sea and the Sea of Japan. Formerly it was an independent monarchy. The Japanese established a protectorate over Korea March 2, 1906, and annexed the country August 29, 1910. The capital is Seoul.

Area and Population. As officially stated, the area is 14,123 square ri (217,826 square kilometres, or 84,103 square miles). This area is about equivalent to the combined extent of Pennsylvania, Delaware, Maryland, and West Virginia. The population, as calculated for December 31, was 16,913,224 in 1916 (8,768,846 males, 8,144,378 females), as compared with 16,414,232 in 1915 and 15,929,962 in 1914. The population as calculated for the end of 1914 consisted of 15,620,720 Koreans, 291,217 Japanese, and 18,025 foreigners (16,360 males, 1665 females). Most of the foreign residents are Chinese. Seoul has about 300,000 inhabitants.

Education. Study of the Chinese classics and of the Confucian system of ethics, which formerly was an essential in the education of the upper classes, is being superseded under Japanese influence by more utilitarian instruction. Aside from ancestor worship, which is observed punctiliously, religion has small hold on the mass of the people, although the country has numerous Buddhist monasteries. Christian missions have made noteworthy progress; there are over 250 Protestant (British and American) and 60 Roman Catholic missionaries. Schools in 1915: Japanese: primary, 285 schools, with 952 teachers and 28,179 pupils; other schools, 19, with 195 teachers and 2581 pupils;—native: 404 public schools, with 1820 teachers and 53,019 pupils; other schools for natives, 1230, with 3095 teachers and 56,436 pupils. There are several technical and industrial schools. All schools, including those of the missions, are under control of the Department of Education.

Production. Korea is almost wholly an agricultural country, but farming methods are primitive and transportation facilities inadequate. The fields are usually cultivated on a small scale and are owned by the richer classes. The staple product is rice, followed by wheat, millet, barley, soy beans, peas, and red beans. Other products are cotton, tobacco, hemp, and ginseng. The reported area under rice in 1914 was 1,079,341 cho (1 cho = 2.45062 acres); wheat, 729,921; millet, 473,082; various peas, 425,455. Production in 1914 included: rice, 12,159,167 koku (1 koku = 5.119 bushels U. S.); wheat, 6,450,080; millet, 3,212,467; various peas, 2,462,613; cotton, 5,779,765 kwan (1 kwan = 8.26733 pounds, or 3.75 kilograms); hemp, 6,122,520 kwan; tobacco, 872,340 kwan. Sericulture, in consequence of official encouragement, is extending. Live stock as reported for the end of 1914: cattle, 1,338,401; horses, 52,545; goats, 11,610; swine, 757,803. Value of fisheries products in 1915, 13,200,442 yen, as compared with 12,061,685 in 1914 and 7,871,910 in 1910. The mineral output was valued at 8,110,412 yen in 1913 and 8,398,458 yen in 1914;—gold output in 1914, 6,064,318 yen; silver, 18,712; coal, 739,791. Gold mining has been carried on mainly by Europeans and Americans, but the mining of gold and other minerals has been begun by Japanese. The principal industrial products of Korea are textile fabrics, paper, pottery, metal wares, tobacco manufactures, brewed drinks, and leather. These goods for the most part are the output of subsidiary house industries and are insufficient to meet the domestic demand.

Commerce. Imports and exports of merchandise were valued at 74,456,805 yen and 56,801,934 yen in 1916, as compared with 59,199,357 and 49,492,325 in 1915. In thousands of yen, imports and exports of merchandise and of coin and bullion have been as follows:

	1912	*1913*	*1914*	*1915*	*1916*
Mdse.:					
Imports ..	67,115	71,580	63,231	59,199	74,457
Exports ..	20,986	30,879	34,389	49,492	56,802
Coin and bullion:					
Imports ..	1,478	202	304	813	1,636
Exports ..	10,124	10,944	10,825	11,764	16,121

Leading imports in 1915 and 1916, in thousands of yen: sheeting, shirtings, and Japanese cotton piece goods, 10,292 and 12,768; cotton yarn, 2403 and 2976; kerosene, 1702 and 2337; machinery, 1223 and 2026; paper, 1504 and 1971; coal and coke, 1810 and 1947; sugar, 1541 and 1899; grass cloths, 1185 and 1663; timber and planks, 1437 and 1328; wheat flour, 684 and 865.

Leading exports in 1915 and 1916, in thousands of yen: rice, 24,517 and 19,357; beans, 5328 and 6357; cattle hides, 3539 and 3574; raw and ginned cotton, 1158 and 1250; fish, 897 and 1349; red ginseng, 1235 and 1273; gold ore, 930 and 1044; iron ore, 502 and 569; live stock, 338 and 436; barley and wheat, 146 and 429.

Imports and exports of merchandise by countries, in thousands of yen:

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
Japan	41,535	52,459	40,901	42,964
China	8,022	9,565	5,599	8,062
United States	3,934	6,552	32	964
Great Britain	4,280	4,598	12	67
Asiatic Russia	107	171	2,904	4,715
Total, incl. others	59,199	74,457	49,492	56,802

COMMUNICATION. The Korean railways are owned and controlled by the state. The first railway in Korea, the Seoul-Inchyon line, was opened in 1900, and the lines from Seoul to Fusan and Wiju were completed in 1904 and 1906 respectively. The length open to traffic in 1910, the year of the annexation, was 640 miles; this had increased to 1066 miles in 1917. The bridge over the Yalu River at Antung (Manchuria) was completed in 1911. The Seoul-Antung line (which connects with the Manchurian railway system) and the Seoul-Fusan line form a trunk line 558 miles long traversing the length of the peninsula. Branch lines connect with important coast towns. The railways are of standard gauge. The trunk line forms part of the shortest route between Europe and the Far East.

In 1917, there were 610 telegraph offices, with 4866 miles of line and 14,144 miles of wire, as compared with 7736 miles in 1910. Post offices in 1910, 438; in 1917, 526.

FINANCE. The monetary unit is the Japanese yen; its par value is 49.846 cents. Revenue and expenditure in the fiscal year 1915 amounted to 62,047,661 yen and 55,099,835 yen respectively (ordinary 35,692,238 and 32,277,750). The budget for the fiscal year 1917 balanced at 59,848,998 yen. For the fiscal year 1918, the estimated revenue was 62,589,309 yen (ordinary 44,518,346) and the estimated expenditure, 62,562,277 yen (ordinary 38,982,032). The larger estimated ordinary receipts for the fiscal year 1918 were: receipts from railways, 10,807,266 yen; land tax, 9,916,011; customs duties, 4,371,990; receipts from ports, telegraphs, and telephones, 3,909,113; receipts from Pyeng-yang mining station, 1,705,220; liquor tax, 1,135,763. Total receipts from taxes were estimated at 18,088,790 yen, and from government enterprise and state property at 21,684,977 yen. Extraordinary estimated revenue consisted of 13,070,963 yen proceeds of loans and 5,000,000 yen national treasury grant. The finances of Korea had long been in a confused state when, as a result of the agreement with Japan in 1904, a financial adviser, recommended by the Japanese government, entered upon his duties and opened the way for financial adjustment. Upon the conclusion of a new agreement with Japan in 1907, the resident-general was appointed to act as the representative of the Japanese government and assumed the duty of guiding and protecting the country. The work of administrative reform made rapid progress, and, especially in respect of finance and economy, the various systems which had given rise to evil practices and prevented the growth of industry were replaced. In August, 1910, the Japanese and Korean governments concluded the treaty of annexation with the object of promoting the welfare of the nation and consolidating the basis of peace in the Orient. The Japanese government appointed a governor-general of the country, which then assumed the name of Chosen, to take general control of all administrative affairs.

KORNILOFF, L .G. A former general in the Russian army. He was born on June 30, 1870, in a village of western Siberia, of Cossack parents. By unusual energy and self-denial he was able to enter the Cadet Corps at the age of thirteen, and obtained a commission in 1892. He went to Turkestan, returned to the Staff College in 1895, and, after graduating with the highest honors, returned to Turkestan. During 1896-1902 he carried out a number of perilous missions in Afghanistan and Persia. Commanding a brigade in the Russo-Japanese War, he was conspicuous for military talent and joined the Russian General Staff at the end of the war. In 1907-11 he was military attaché at Peking, after which he was put in command of the Trans-Amur frontier force. At the beginning of the great war he was in command of the Forty-Eighth division. His remarkable ability and energy in the Russian campaign in Galicia made his name known throughout the world. In August, 1917, he was made commander-in-chief of the Russian army, but accepted the position only on the condition of being allowed to restore the fighting efficiency of the army by stern discipline. It was over this question that he later broke with Kerensky at the Moscow Conference. The general maintained that the morale and discipline of the army could only be restored by the reëstablishment of the extreme penalties for cowardice and treason at the front. For an account of his abortive attempt to overthrow the Kerensky government and his subsequent career in Russia see RUSSIA, *History*.

KREISLER, FRITZ. See MUSIC, *Artists, Instrumentalists;* also section *Chamber-Music.*

KUNWALD, ERNST. See MUSIC, *Orchestras.*

KURDISTAN. A region lying southeast of Armenia, partly in Persia, but mostly in Turkey. Kurdistan has no definite boundaries, but its area is estimated at about 74,000 square miles and its population at about 3,000,000. Roughly, four-fifths of the inhabitants are Kurds, Mohammedan nomads who often pillage and massacre the Armenian Christians. Turkish Kurdistan is included in the division known as Armenia and Kurdistan.

KÜSTENLAND. See COASTLAND.

KWANGCHOW-WAN. A territory on the coast of the Chinese province of Kwantung, leased by China to France for 99 years from April 11, 1898; in 1899 two islands in the bay were included in the lease. It forms a division of French Indo-China. The area is stated at 1000 square kilometres. The population in 1911 was about 158,881. The budget for 1917 balanced at 429,700 piasters.

KWANTUNG, or KWANTO. A Japanese leasehold in the southern part of the Liaotung Peninsula, Manchuria. According to the *Financial and Economic Annual of Japan,* a government publication, the area, including adjacent islands, is about 219 square ri (1304 square miles). The same authority states that the population actually domiciled in Kwantung was 555,104 at the end of 1916 (313,487 males, 241,617 females), including 502,369 Chinese and 52,640 Japanese. The total area under cultivation at the end of 1916 was 90,064 cho (220,714 acres); the principal crops include corn, millet, rice and other cereals, beans, and various vegetables. Marine salt is produced, in 1916 483,339 koku (2,474,222 bushels U. S.). The most promising manufactures are bean oil, bean cake, cement, brick, lime, and glass. In accordance with an agreement concluded in June, 1907, between China and Japan, Kwantung has formed, since July 1 of that year, a district under the Chinese Maritime Customs, with a custom house at Dairen (formerly Dalny). In 1914, imports and exports were valued at 48,939,830 yen and 58,538,013 respectively; in 1916, 76,519,416 yen and 84,138,926 yen. In 1916, imports from and exports to Japan were 40,867,250 and 42,513,698 yen respectively; China, 26,925,586 and 23,303,958. There are about 80 miles of railway in operation, connecting Ryojun (formerly Port Arthur) and Dairen with the Manchurian systems. For the fiscal year 1917-18, the budget balanced at 4,702,796 yen; in addition, the budget of the local expense account balanced at 2,944,416 yen. The leasehold, which the Japanese call "the leased territory of Kwanto" and also "Kwanto Province," is administered by a governor-general, resident at Ryojun.

LABOR. During 1917 there was no cessation of the improvement of the wages and hours of labor in the United States which had marked the other years of the war. While the money income of labor was therefore substantially greater than ever before its material condition probably was not improved because the advances of the prices of foods and fundamental necessities were proportionately greater than advances in wages (see PRICES). In other industrial countries a similar condition prevailed. Abroad as at home there was a relative scarcity of labor; unemployment (q.v.) was reduced to the inevitable minimum due to sickness, delays in materials, and the shifting of labor; wages were advancing, but advances were more than offset by the rising cost of living. In the United States the agitations of the extreme radicals were somewhat more conspicuous than before the war (see INDUSTRIAL WORKERS OF THE WORLD). Strikes and lockouts (q.v.) were numerous but none was spectacular; yet considerable advance was made by public opinion with reference to plans of arbitration and conciliation (q.v.). The agitation for social insurance (q.v.) was extensive but gathered little momentum owing to the pressure of war interests. The same was true of the movement for the establishment of a legal minimum wage (q.v.) and pensions for mothers (q.v.). See also LABOR LEGISLATION, AMERICAN ASSOCIATION FOR; OCCUPATIONAL DISEASES; OLD AGE PENSIONS; TRADE UNIONS; UNEMPLOYMENT; WORKMEN'S COMPENSATION. Matter of interest in connection with labor problems will also be found under CHILD LABOR; LABOR, AMERICAN FEDERATION OF; LABOR LEGISLATION; PRICES; and WOMEN IN INDUSTRY.

UNITED STATES. An indication of the tendencies of the labor situation in the United States is given by data prepared by the Bureau of Labor Statistics comparing the number employed and the amount of pay roll in various fundamental industries from January, 1915, to August, 1917. From these tables it appeared that the increase in the number on the pay rolls in January, 1917, as compared with January, 1915, was 23 per cent for boots and shoes; 17 per cent for cotton finishing; 22 per cent for wool manufacturing; 23 per cent for hosiery and underwear; 9 per cent for silk; and 64 per cent for iron and steel. From January to August, 1917, there was some decrease in the numbers on the pay rolls for all of these industries except iron and steel. The increase in per capita earnings from January, 1915, to August, 1917, was 39 per cent for boots and shoes; 35 per cent for cotton manufacturing; 45 per cent for woolen manufacturing; 35 per cent for hosiery and underwear; 28 per cent for silk; and 64 per cent for iron and steel. The year 1917 was particularly notable for extensive increases in wages. The movement toward the eight-hour day was unchecked by the pressure of war work. In its *Monthly Review* (September) the bureau stated that during the first six months of 1917 the hours of labor had been reduced to eight per day for over 537,000 employees in a limited number of establishments. These did not include the 400,000 railway men affected by the Adamson Law. Most of them were in Pennsylvania, New York, Connecticut, Ohio, Illinois, and Massachusetts. See for other phases of labor developments in the United States the cross references given above.

FRANCE. Various aspects of the industrial changes in France since the war began are indicated by a report issued in April indicating the number of establishments in various lines in operation and the number of their employees. The report was based on an investigation of 44,860 establishments which, under normal conditions, had employed 1,512,000 persons. It was found that of the total number of establishments only 52 per cent were in operation in August, 1914; 68 per cent in January, 1915; 84 per cent in January, 1916, and 89 per cent in January, 1917. On the latter date the percentages for number of establishments ranged from 55 for precious stones to 95 for food preparation and commerce; 97 for storage and transportation, and 98 for leather and hides. As regards number of employees only 35 per cent of the normal number were at work in August, 1914; 56 per cent in January, 1915; 82 per cent in January, 1916; and 98 per cent in January, 1917. When it is understood that on an average 24 per cent of employees were withdrawn by mobilization it is seen that by January, 1917, great numbers of additional employees had been drawn into industry, amounting to 22 per cent of the total. Whereas in January, 1917, rubber, paper, cardboard, printing and binding, textiles, clothing, millinery, etc., precious stones, building trades, porcelain, pottery and glass, and commerce had fewer employees than the normal, the following showed an increase above normal by the percentages indicated: food preparation, 10; chemical, 44; leather and hides, 16; wood working, 7; metallurgy, 90; storage and transportation, 28. These additional employees were secured largely by recruiting laborers from Indo-China, other colonies, Algeria, North Africa, China, Italy, Greece, and Portugal. These laborers were imported either under a contract between the state and the laborer, or under contracts between the state and an agent agreeing to secure a group of colonial recruits. It was estimated that on December 1, 1916, colonial and foreign laborers recruited numbered 191,700. Of these 61 per cent were colonials from Algeria, Tunis, Morocco, and Indo-China, while the remainder were Greeks, Italians, Portuguese, Spaniards, Serbians, and others.

Another indication was the decline in the number of unemployed persons granted benefits from the national unemployment fund. Late in 1914 and early in 1915 their number averaged 183,560 fortnightly. The number dropped continuously to 33,811 for each fortnight from January 2 to November 6, 1917.

GREAT BRITAIN. British industry was marked by a dearth of labor rather than by a problem of unemployment. While the number unemployed was in total apparently considerable this was almost entirely an incidental accompaniment of inevitable industrial changes. Thus the total number on the registers of the 382 British employment exchanges on June 8, 1917, was 127,969. During the next five weeks there were registered a total of 306,863 persons; but there remained on the registers on July 13 only 112,587 persons. In August, 1917, the *Labor Gazette* reported shortages of labor in the following trades: pig iron, iron and steel, cotton, woolen and worsted, jute, linen, silk, carpet, lace, bleaching, dyeing and finishing, tailoring, shirt and collar, other clothing, brick and cement, book binding, paper, glass and food preparation. In addition, overtime was reported in the following trades: engineering, shipbuilding, leather, saw milling and machining, cement, printing and book binding, paper, pottery, and food preparation. In no trade was there more than 10 per cent of unemployment on June 1, 1917, with the exception of diamond workers, 17 per cent, harbor laborers, 47.8 per cent, and seamen, 28.7 per cent.

Progress of the war early showed that the thoroughgoing coöperation of labor was essential to military success. The traditional opposition of labor and capital resulting in frequent interruption in industry and in the adoption by labor of policies designed to reduce output and spread employment seriously handicapped the nation in its titanic struggle for existence. Consequently, in 1915, a truce was brought about between employers and organized labor, and the Munitions War Act established the principle of compulsory arbitration in all industries relating to military needs and gave the Ministry of Munitions extensive authority of regulating the employment of labor. Gradually waste was eliminated and order and efficiency increased. Industries not essential to war purposes ceased to exist. Employers seeking to entice labor from other industries were made liable to heavy penalty; as were also employers found to be using their labor in uneconomic ways, such as holding labor for future contracts or employing skilled men in positions suitable for unskilled men. The limitation of profits to the level of the two years preceding the war was accompanied by the fixing of wages at existing rates with only such modifications as were made necessary by the increase in the cost of living. Such increases may be authorized by the Committee on Production of the Munitions Ministry, which holds hearings three times a year, collects all available statistical and other information, and awards increases of wages in the nature of war bonuses. Such increases are paid ultimately by the Government. Strikes and lockouts have been illegal; arbitration has been compulsory; and persons inciting to strikes or interfering with the new arrangements are liable to imprisonment for life. In view of the agreement of trade unions to suspend numerous practices for securing advantages for organized labor the Government pledged itself to restore pre-war conditions when the war ceases. This latter agreement occasioned considerable discussion in 1917 because numerous writers believed that, instead of reestablishing such conditions as existed before the war, the entire status of labor should be put on a new and higher basis than previously existed. Serious strikes were unknown in 1917, but there were occasional slight interruptions owing to misunderstanding over questions of the shifting of labor and the substitution of women workers. There were no strikes for higher wages because of the new readjustment of wage rates. Moreover, the Committee on Health of Munition Workers gave such extensive attention to hours and sanitary conditions not only for women and children but for all workers that there was throughout the year a steady improvement in health and productivity.

Much attention has been paid since the middle of 1915 to the problem of the most efficient length of the working day. It was early discovered that not only were women and children being worked too long from the standpoint of maximum production, but that in a great many cases adult men also were having their gross productivity reduced by long hours, much overtime, and the lack of Sunday holidays. A report of the Health of Munitions Workers' Committee, issued in 1917 and dealing with this problem, showed for example that a group of women working 66.2 hours per week increased their output per hour by 34 per cent when the hours per week were reduced to 54.8; and their weekly output was increased by 11 per cent. When the hours of these women were further reduced to 45.6 per week, the hourly production was increased to 58 per cent over the original (66.2 hour week) production while their total weekly product was still 9 per cent more than for the longer week. A group of men improved their hourly output 37 per cent and their total weekly output 21 per cent when working 51 hours as compared with 58 hours per week. In other ways it was shown that reduction of hours showed advantages, as, in improvement of quality, reduction of accidents, reduction of waste, and reduction of loss of time through sickness.

Under an order of the Local Government Board, issued in August, agricultural executive committees previously brought into existence in connection with the campaign to increase domestic food production were authorized under certain circumstances to exempt men from military service and retain them in work on the soil.

REFERENCES. H. L. Sumner and E. E. Hanks, *Administration of Child Labor Laws: Part 2. Employment-certificate system;* H. R. Walter, *Munition Workers in England and France*, a summary of reports issued by the British Ministry of Munitions; Sydney Webb, *The Restoration of Trade Union Conditions;* W. O. Weyforth, *The Organizability of Labor;* E. N. Clopper and L. W. Hines, *Child Labor in the Sugar-beet Fields of Colorado;* W. Jett Lauck and Edgar Sydenstricker, *Conditions of Labor in*

American Industries; M. Van Kleeck, *A Seasonal Industry; a Study of the Millinery Trade in New York;* J. E. Rhodes, *Workmen's Compensation.*

The Bureau of Labor Statistics of the United States Department of Labor published the following bulletins in its "Labor as Affected by the War Series": No. 221, *Hours, Fatigue, and Health in British Munition Factories;* No. 222, *Welfare Work in British Munition Factories;* No. 223, *Employment of Women and Juveniles in Great Britain During the War;* No. 230, *Industrial Efficiency and Fatigue in British Munition Factories;* No. 237, *Industrial Unrest in Great Britain.* This bureau also published bulletins in each of the following series: *Wholesale Prices; Retail Prices and Cost of Living; Wages and Hours of Labor; Women in Industry; Workmen's Insurance and Compensation; Industrial Accidents and Hygiene; Conciliation and Arbitration; Labor Laws of the United States; Foreign Labor Laws; Miscellaneous.*

LABOR, AMERICAN FEDERATION OF. Founded in 1881, this organization has become the largest and most important body of organized labor in the world. At its annual meeting at Buffalo in November it reported a total paid membership of 2,371,434, an increase of nearly 300,000, in one year. It comprised about 22,000 local unions grouped under about 110 national and international (United States and Canada) unions. The federation comprises five major departments, building, metal, mining, union label, and railroads. It maintained in the field nearly 1800 organizers.

The importance of the federation as the representative of labor was repeatedly emphasized during the year. President Gompers was an important member of committees of the Council of National Defense; its first vice-president, Mr. James Duncan, was a member of the United States Commission to the Russian People; numerous of its officers were influential in settling disputes in industry and otherwise aiding in preserving industrial efficiency.

The Buffalo convention voted to hold the annual meetings hereafter in June instead of November. The 1918 meeting will be held at St. Paul, Minn. The dominant note of the 1917 convention was loyalty to the government in war time. This was in harmony with the policy which President Gompers and the executive council had carried out by entering into close coöperation with the Council of National Defense and the executive departments of the government. Partly to enlist the enthusiastic support of the organization President Wilson made a special trip and address to the convention. In consequence, many of the internal disputes were forgotten. In the convention of the Building Trades' Department preceding that of the federation it was voted to exclude disputes over jurisdictional matters during the war. In case of such a dispute the presidents of the two international unions involved should be notified and endeavor to reach an agreement; if they failed the matter was to be referred to the Building Trades' Department. Similarly the coal miners agreed to coöperate with the Fuel Administrator, Harry A. Garfield, who had shortly before secured an agreement whereby the wages of miners might be increased, but whereby a penalty for either strike or lockout might be enforced. This agreement was made with the United Mine Workers. Another indication of the loyalty of the membership was the endorsement of the American Alliance for Labor and Democracy organized by President Gompers to offset the activities of the Peoples' Council. Every single act of the president and executive council in connection with the war was unanimously approved without discussion. A resolution favoring the conscription of aliens in this country was overwhelmingly approved.

Other resolutions favored the extension of the Adamson Law to all railway employees; urged a Federal eight-hour law for women and children; attacked Postmaster General Burleson for his "autocratic" attitude toward the unions of postal employees; refused a national charter for stenographers and office workers; endorsed woman suffrage and approved the Federal suffrage amendment; demanded for women the same pay as men when doing the same work; accused the postmaster-general of suppressing papers devoted to the interests of labor, contrary to the constitution. A special organizer to work among southern negroes was authorized.

A most important feature of the year's activities was the report of a special committee on coöperation. This endorsed the well-known Rochdale plan of coöperation and proposed that a "qualified trade unionist coöperator be appointed to serve one year as lecturer and adviser on the practical work of Rochdale coöperation." Every local union was requested to contribute one dollar for this cause. An unexpected event was the election of Daniel J. Tobin, president of the Teamsters' Union, as treasurer of the organization, to succeed John B. Lennon, who had held that position for twenty-eight years. All other previous officers were reëlected.

The most important expression of opinion by the convention related to terms of peace. The executive council declared that "adequate and direct representatives of the wage earners among the plenipotentiaries must be sent to the peace congress"; and offered "the following declarations as the basis on which peace must be negotiated: 1. The combination of the free peoples of the world in a common covenant for genuine and practical coöperation to secure justice and therefore peace in relations between nations. 2. Governments derive their just power from the consent of the governed. 3. No political or economic restrictions meant to benefit some nations and to cripple or embarrass others. 4. No indemnities or reprisals based upon vindictive purposes or deliberate desire to injure, but to right manifest wrongs. 5. Recognition of the rights of small nations and of the principle 'no people must be forced under sovereignty under which it does not wish to live.' 6. No territorial changes or adjustment of power except in furtherance of the welfare of the peoples affected and in furtherance of world peace. In addition to these basic principles, which are based upon declarations of our President of these United States, there should be incorporated in the treaty that shall constitute the guide of nations in the new period and conditions into which we enter at the close of the war the following declarations, fundamental to the best interests of all nations and of vital importance to wage-earners: 1. No article or commodity shall be shipped or delivered in international commerce in the production of which children under the age of sixteen have been employed or permitted to work. 2. It shall be declared that the basic workday in industry and commerce shall not exceed eight hours. 3. Involuntary servitude shall not exist except as a punishment for crime whereof the party shall have been duly convicted. 4. Establishment of trial by jury." These resolutions were approved by the convention.

INTERNATIONAL RELATIONS. Recent years have seen a growing tendency on the part of the federation to cultivate the relations of European, South American, and Japanese organized labor. In accordance with a vote of the 1916 convention, the executive committee issued a manifesto on February 9 creating the Pan-American Federation of Labor Conference Committee. It was given an office in the Federation Building in Washington. Its purpose was to prepare the way for a conference of organized labor of Canada, United States, Mexico, and South American Republics in the near future. The manifesto called attention to the following items as the essential features of the organized labor programme in all countries: higher wages; shorter work days; more safe and sanitary conditions; better homes, and surroundings; prohibition of child labor; and laws to secure the rights of association, free assemblage, free speech, free press, and the right to strike. In similar tone there was an exchange of felicities between the federation and organized labor in Japan. The federation also sought in various ways to strengthen the loyalty of organized labor in France and England, and to preserve the fighting capacity of Russian labor.

LABOR EXCHANGES. See UNEMPLOYMENT.

LABORI, FERNAND GUSTAVE GASTON. A French criminal lawyer, died in Paris, March 14, 1917. He was born in Rheims in 1860, and at twenty-four was admitted to the bar in Paris. Almost from that time he began to attract attention by his eloquent pleas in criminal trials. He was able to sway not only the public, but judge and jury as well, and he participated in many a sensational court scene. He served as counsel for the defense in most of the political trials held during his period at the bar. But he was famous chiefly because of his important relation to the Dreyfus case. Labori was retained as counsel by Emile Zola, after the novelist had written (1898) the open letter *J'accuse*, which eventually secured a new trial for Dreyfus in 1899, and then he took up the cause before the Rennes court-martial. His brilliant conduct of the case, and especially his cross examinations, made him a leading figure, hated as much as Dreyfus by the anti-Semites and army officers. During the trial he was shot in the back by an assassin, an act that roused high resentment on both sides of the Atlantic and even brought a message of sympathy from the American Bar Association. Maître Labori returned to the trial, with the bullet still in his body, and accomplished a modification of the original sentence, but he did not cease his efforts till Dreyfus was thoroughly cleared of the charge of selling military secrets to a foreign power. He was afterward prominent in political life, till 1909, serving as deputy. In 1911 he received the highest honor in his profession in France, election to the presidency of the Paris Society of Barristers. In 1913 he visited the United States. In the next year he successfully defended Madame Caillaux, who, after her husband, the Minister of Finance, had been attacked in the *Figaro* by Gaston Calmette, the editor, murdered Calmette.

LABOR LEGISLATION. During 1917 labor laws were enacted by regular legislative sessions in forty-four States, special sessions in twelve States, and two sessions of Congress. Probably the most important legislation dealt with insurance and compensation. Especially is this true of the remarkably liberal provisions of the Federal government for soldiers and sailors, as described under INSURANCE, SOCIAL INSURANCE; and WORKMEN'S COMPENSATION. Other important enactments not stated below will be found under CHILD LABOR; INJUNCTION; LABOR; MINIMUM WAGE; OLD AGE PENSIONS; UNEMPLOYMENT; and WOMEN IN INDUSTRY. A complete summary was published in *The American Labor Legislation Review* for September from which the following facts are taken.

WAGES. Laws requiring payment of wages twice monthly were enacted in Tennessee applying to all private employments; in New Mexico applying to railroads, mines, and factories; in Nebraska, North Dakota, and West Virginia applying to railroads; and in California and Wisconsin applying to certain public employees. Hereafter wages must be paid in cash or negotiable paper in Illinois, Kansas, Minnesota, New Mexico, and Tennessee. In Maine and Utah assignment of wages hereafter requires the consent of the wife; in Arizona and Florida a wife may collect wages due a deceased husband. In nine States mechanics' lien laws were revised, namely, Arkansas, Delaware, Massachusetts, Montana, North Dakota, Texas, Washington, West Virginia, and Wisconsin. California, Connecticut, and Ohio passed laws requiring contractors engaged on public works to give bond for the payment of labor. Colorado made cheating a person of wages a swindle punishable by fine, or imprisonment, or both. Tennessee prohibited misrepresentation of wages. New Hampshire required a workman in lumbering to return labor for wages paid. California and Ohio forbade persons hiring workmen for another person or firm receiving any consideration, pay, or tip from persons hired, while Michigan and Ohio require hearings for railroad employees before discharge or disciplining. California forbids employers requiring employees to purchase goods from specified persons or places, requires employers to pay costs of necessary bonds or photographs, and public service corporations to furnish letters on discharge.

TRADE DISPUTES. California forbade the use of the home defense guard, created for the war, in industrial disputes. Idaho, Minnesota, and Utah defined "criminal syndicalism" and made it punishable. The Idaho law defines this as the doctrine advocating crime, sabotage, violence, or unlawful methods of terrorism for the purpose of accomplishing industrial reform. Advocacy of this doctrine in any way is made severely punishable; as is also knowingly to permit the use of a building for such propaganda. The Minnesota law was quite similar (see INJUNCTION for Utah law). New Hampshire prohibited strikes or lockouts in munitions or military supplies factories during the war. Utah directed its new industrial commission to promote voluntary arbitration.

HOURS. Montana and Nevada established an eight-hour day for women in many employments; Nevada permits fifty-six hours per week and exempts harvesting, curing, canning or drying fruits or vegetables, and nursing. Thirteen other States extended their restrictions on hours of women and minors, and Wyoming somewhat reduced her previous limitations. Alaska established a universal eight-hour day for all workers, and Kansas for men in lead and zinc mines. California and Montana extended the scope of their eight-hour laws for public works; Oregon exempted from the eight-hour law labor in municipally owned and operated plants in cities of over 1000. Congress established an eight-hour day for public work in Porto Rico, and authorized the president to suspend the eight-hour day on work done under contract for the government, as a war measure. See section in article LABOR.

UNEMPLOYMENT. North Carolina and Oregon authorized investigations of unemployment, and Connecticut of public employment offices. Arizona, Arkansas, Georgia, New Hampshire, North Carolina, South Dakota, and Utah established public employment agencies. Such agencies were extended by Colorado, Illinois (for discharged inmates of prisons and reformatories), Minnesota, New York (requiring separate departments for juveniles in cities of first and second class), and United States ($250,000 to extend employment activities of Department of Labor for war emergencies). Private employment agencies were regulated by Arkansas, Georgia, Michigan, Nebraska, Oklahoma, Tennessee, and Utah. In general, these laws required the licensing and regulation of fees of such agencies.

Vagrancy laws were enacted in Kansas and Minnesota. These defined vagrants and fixed penalties for vagrancy. Of like purpose were the law of Maryland requiring all able-bodied men, eighteen to fifty, not usefully employed in war time to register and to work in some public or private employment, and that of West Virginia requiring every able-bodied man, sixteen to sixty, to be regularly employed in some useful occupation until six months after peace, or suffer the penalties of vagrancy. In West Virginia the possession of money and property shall be a defense against the applicability of this law.

SAFETY AND HEALTH. Laws amending child labor restrictions were enacted in Arkansas, California, Delaware, Illinois, Kansas, Maine, Michigan, New York, Oklahoma, Porto Rico (by Congress), South Carolina, Tennessee, Texas, Utah, Vermont, and Wisconsin. In general, these extended the scope or raised age limits. Michigan created a commission to investigate; California, Texas, and Delaware exempted farming from child labor restrictions. South Carolina raised the age limit from fourteen to sixteen, as did Delaware, Utah, and Vermont. Texas extensively modified its child labor law, fixing a general age limit of fifteen, with seventeen for distilleries, breweries, and certain messenger services.

Many States showed a tendency toward standardization of safety regulations and the granting of discretionary regulatory power to a board or administrative officer. This was clearly done in New Hampshire, Utah, Idaho, and Wyoming. In West Virginia the commissioner of labor was authorized to make safety rules for sand and clay mines, quarries, and cement works. Montana provided in detail for safety of electrical workers; Washington for coal miners; and Pennsylvania for workers in compressed air.

THE OREGON TEN-HOUR LAW. In 1913 Oregon passed a law generally applicable to factory labor limiting such labor to ten hours per day or sixty per week and fixing high wages as penalty for overtime employment. This law was brought before the Oregon courts by F. O. Bunting, who employed a workman in regular factory labor and subsequently sought avoidance of penalty on the ground that the law was unconstitutional. He claimed that the act was not a health regulation but a wage law and resulted in taking property without due process. He did not deny that the State may enact laws for the regulation of health. The State Supreme Court upheld the law on the ground that it was designed to protect the health, well-being, and general welfare of the public and not designed to regulate wages. The United States Supreme Court confirmed this opinion. It held that the fixing of a wage penalty for overtime employment did not make the act a wage law; that a State legislature may at its discretion established new policies provided these do not exceed constitutional limitations; and that the judgment of the legislature and of the State courts must be given due weight in determining the usefulness or necessity of such legislation.

The importance of this decision is greatly increased by the fact that the United States Supreme Court in the case of Lochner *v.* New York in 1907 had declared by a vote of five to four that a statute fixing a ten-hour day and sixty-hour week for employment in bakeries was unconstitutional. In the Lochner opinion the majority had held the New York statute an interference with freedom of contract, while the minority opinion had confirmed the view of the New York court that the law was a proper health regulation. Thus in the case of Bunting *v.* Oregon the Supreme Court in 1917 adopted the view of the minority in 1907; but no reference was made to the Lochner case, which is thus superseded.

FEDERAL EIGHT-HOUR LAW. In connection with the pressure of war business there was a tendency to break down established restrictions on the length of the working day and to introduce an excessive amount of overtime. A striking instance of this was the suspension of the Federal eight-hour law. On March 24 President Wilson under authority of the Naval Appropriation Act of March 4 suspended the provisions of the act of June, 1912, which limited the hours of daily service of mechanics and laborers on work under contracts to which the United States is a party relating to ordnance and other military supplies, building contracts at arsenals, and contracts for fortifications. On April 28 under authority of the same act the eight-hour law was further suspended in so far as it related to contracts made by the War Department either for the construction of military buildings or on any public work connected with national defense, whether the labor involved was employed directly by government contractors or by agents of the government.

ADMINISTRATION. The centralization of labor law administration under a single head was effected in Illinois, Montana, Utah, and Vermont. A commissionership of labor and statistics was created in Wyoming, and a department of agriculture and labor in Porto Rico. The classification of mine inspectors was required in New Jersey and Pennsylvania. The inspection of mines by a special inspector was begun in Arkansas and extended in Kansas, Nevada, Ohio, Pennsylvania, Tennessee, and West Virginia. In New Hampshire the regulations of the commissioner of labor and in Utah those of the industrial commission are made subject to review as to validity and reasonableness, in the former State by the commissioner and in the latter by the commission first and then by the courts. The Pennsylvania industrial board is authorized after hearings to modify the law regulating the hours and conditions of women's work, except as to factories; but the maximum number of hours may not be increased. Wyoming created the office of commissioner of labor statistics.

Mexico. The Mexican constitution promulgated February 5 contained many interesting labor provisions. A universal eight-hour day and seven-hour night were established, with a limit of six hours per day for children twelve to sixteen. It was provided that the minimum legal wage should be that considered sufficient, according to conditions in different sections, to satisfy the normal needs of the workman's life, education and recreation, considering him as the head of a family. Equal pay for both sexes and all nationalities was established. Workers in commercial, agricultural, mining, and manufacturing were given the right to share in profits. Minimum wages and the rates of profit-sharing are to be fixed by special commissions for each municipality under direction of a Central Board of Conciliation, to be set up in each state. Overtime is limited to three hours on any one day and to three consecutive days, and must be paid for at double regular wages; no woman and no boy under sixteen may work overtime. Employers are required "to furnish their workmen comfortable and sanitary dwelling places for which they may charge rents not exceeding one-half of 1 per cent per month of the assessed value of the properties." Employers must provide schools and dispensaries, public markets, and other community buildings in labor centres. Both Federal and state governments are committed to the furtherance of old age pensions, sickness, life, unemployment, and other similar insurance plans; and also to the formation of coöperative associations.

The new constitution of the state of Vera Cruz-Llave adopted late in the year contained many provisions similar to the foregoing.

LABOR LEGISLATION, American Association for. This is a branch of the International Association for Labor Legislation and has itself established branches in the important industrial States. It holds annual conferences on leading problems of industry; maintains headquarters at 131 East Twenty-third Street, New York City, with John B. Andrews as secretary, and publishes quarterly the *American Legislation Review*. In 1917 it exerted itself vigorously to check the tendency toward a reduction of industrial safeguards because of the pressure of war business. It declared that war time made more rather than less necessary the protection of labor against accidents, diseases, industrial poisoning, and excessive fatigue. It outlined minimum requirements necessary to promote industrial efficiency, including safety, sanitation, proper hours, wages, protection of children and women, social insurance, development of the labor market, and careful administration. It held that special attention should be given to the three-shift system in continuous industries, with one day's rest in seven in all industries. It favored equal pay for men and women doing the same work, with periodic revision in view of rising prices; and the representation of employers, employees and the public on joint councils to coöperate with State and Federal labor departments. Its principal propaganda in the last two years has been in favor of health insurance (see Social Insurance); it has, however, carried on special investigations into the diseases of occupation (see Occupational Diseases); it has a Committee on Continuous Industries with Professor John R. Commons as chairman; and it has pushed labor legislation for improving the administration of labor laws and checking the evils of unemployment. Its paid membership, December 31, 1916, was 3062.

LABRADOR. A peninsula in British America, between Hudson Bay and the Atlantic Ocean; also a strip along the northeast coast of the peninsula which forms a dependency of Newfoundland. Excepting this strip the peninsula is within the Canadian province of Quebec.

LABUAN. A small island off the northwest coast of Borneo administratively attached to Singapore, Straits Settlement (q.v.).

LACHINE CANAL. See Canals.

LAFAYETTE COLLEGE. An institution for the education of men, under the auspices of the Presbyterian church, at Easton, Pa. In the fall of 1917 there were 443 students and 45 members of the faculty; in 1917 4 members of the faculty were in government service and 230 students left to enter the military service. Volumes in the library numbered 44,000. A. H. Fuller, dean of engineering at the University of Washington, was appointed professor of civil engineering; H. M. Robinson was appointed college pastor and professor of English Bible; Donald B. Prentice was appointed director of the division of mechanical engineering; and Theodore A. Buenger appointed professor of Latin. Productive funds in 1917 amounted to $770,960 and the income therefrom to $33,417. The gifts for the year amounted to $260,000, not including a bequest of $250,000 from A. N. Seip. Lafayette College was founded in 1826. President, John H. MacCracken, LL.D.

LA FOLLETTE, Robert Marion. See United States, *Congress*.

LAGUNA DAM. See Dams.

LAKE BONNEVILLE. See Geology.

LAKE WASHINGTON CANAL. See Canals.

LAMPTON, William James. An American journalist and verse writer, died in New York City, May 30, 1917. He was born in Lawrence County, Ohio, in 1859, and was educated at Ohio Wesleyan University and Marietta College, the latter of which gave him an honorary A.M. in 1891. His first newspaper experience was gained as editor of a small Republican sheet in Kentucky in 1877-78, after which he was successively reporter for the Cincinnati *Times*, paragrapher for the Steubenville *Herald*, a member of the staff of the Louisville *Courier-Journal*, the *Merchant Traveler* of Cincinnati (editor). the Washington *Critic* and *Evening Star*, and the Detroit *Free Press*. On the *Star* he originated the famous "Shooting Stars" department. Afterward he wrote for leading New York papers, the *Times*, *Tribune*, *Sun*, and *World*, verse relating to current events, usually in the tone of good-humored satire. Col. Lampton (in 1910 he was appointed colonel and aide on the staff of Governor Willson, of Kentucky), made no pretense to high poetical ability, but was rather a humorist to be numbered with Bill Nye, Artemus Ward, and Eugene Field. His friendly human feeling, combined with keen perception of foibles, personal, social, and political, enabled him always to hit the mark without doing wanton injury. Perhaps he is best known for his *The American Eagle Speaks*, written when the United States was discussing diplomatically with Italy the murder by the Mafia of Chief of Police Hennessey of New Orleans. It was done in the style that came to be called the "yawp," and the New York *Sun* by 1897 was claiming Lampton as the founder of a new school of verse. The author himself in 1915 said this genre was essentially what is now known as free verse. Among collections of his verse, stories, etc., are *Yawps and Other Things*, *Confessions of a Husband*, *The Trolley Car and the Lady*, *Mrs. Brown's Opinions*, *Jedge Waxem's Pocketbook of Politics*, and *Tame Animals I Have Known*. He is said to have been a distant cousin of Mark Twain.

LANDOUZY, Louis Joseph Théophile. A French physician, whose death in Paris was announced on May 11, 1917. He was born at Rheims in 1845. In 1867 he went to Paris to finish his studies there. In 1879 he was appointed hospital physician, and a year later assistant professor in the Faculty of Medicine. He accepted the chair of therapeutics in 1893. In 1901 he became professor of clinical medicine and from that year till his death was also dean of the Faculty of Medicine. His early researches were in the field of neurology, but in later life he became especially interested in tuberculosis. His contributions to the study of this disease and his pioneer work in social prophylaxis brought him, a few months before his death, the gold "epidemics" medal. Special welfare work in behalf of tuberculous soldiers was organized by him after the great war broke out. He was long identified with the Laennec Hospital. Landouzy is credited with the discovery of the frequency of tuberculosis in infants and the tuberculous nature of acute pleurisy. He was one of the early champions of the movement for disease prevention through education of the public. He was one of the founders and editors of the *Revue de Médecine*, and a director of the *Presse Médicale*. Some of his important work was done with Dejerine (q.v.). In 1894 he was elected to the Academy of Medicine and in 1913 to the French Institute (Academy of Sciences).

LANE, Harry. An American legislator, died in San Francisco, Cal., May 23, 1917. He was born in Portland, Ore., in 1855, graduated at Willamette University in 1876, and practiced as a physician in his native city until 1887, when he became superintendent of the State Hospital for the Insane. Elected mayor of Portland in 1905, he served through a second term and declined a third. As a Democrat, he was elected to the United States Senate in 1912, for the term ending in 1919. Senator Lane was known in Washington for attacks on the firm of J. P. Morgan and Company and for somewhat sensational statements of various sorts, but he gained nation-wide attention, when, a few months before his death, he allied himself with the Senators who stood out against the declaration of a state of war between the United States and Germany, and who were characterized by President Wilson as a "little group of wilful men." His constituents were many of them so angered that a recall was threatened, but this was found to be unconstitutional.

LANGMUIR, Irving, Researches of. See Chemistry, General Progress of.

LAOS. See French Indo-China.

LAURENTIDE DAM. See Dams.

LAWN TENNIS. See Tennis.

LEAD. The high price of lead in 1916 stimulated activity in lead prospecting and lead mining. Further activity was stimulated by the extraordinarily high price of lead in June, 1917, and by the gradual increase in the price of silver, which led to the reopening of silver-lead mines that had been abandoned years ago on account of the low price of silver. During the first half of 1917 the lead industry was therefore very prosperous, although there was a general increase in the cost of both labor and supplies. The great decline in price that set in just before the middle of 1917 continued until the end of the year when the price was lower than at the beginning of the year, but the decline was accompanied by no corresponding decrease in the cost of production, so that the producers complained that lead was selling below its actual cost.

The lead content of ore mined in the United States in 1917 was about 640,000 tons as compared with 622,967 tons in 1916, a gain of 17,000 tons. The Joplin district gained 8000 tons, California over 5000 tons, Idaho 4000 tons, and Washington and Montana 2000 tons each. Tennessee, which made an annual output of only a few tons in previous years, reported a production of nearly 3000 tons. Arizona and Utah lost about 4000 tons each and Colorado about 2000 tons as compared with 1916. The lead district of southeast Missouri remains the largest producer of lead, the output for 1917 being practically the same as in 1916.

The Bunker Hill Smelter at Kellogg, Idaho, was completed and put in operation during the year. The Empire Smelting and Refining Co. rebuilt the old smelter at Deming, N. Mex., and treated ores from April until October, when the plant was destroyed by fire. The Ontario Smelting and Refining Co. is building a soft-lead smelter in the northeastern part of Oklahoma, a few miles southwest of Baxter Springs, Kans. It will be equipped with four Newman automatic hearths, a lead stack, and a bag house.

The production of refined lead, desilverized and soft, from domestic and foreign ores in 1917 is estimated at 599,000 tons, worth at the average New York price about $110,000,000, compared with 571,134 tons, worth $78,816,000, in 1916. The figures for 1917 do not include an estimated output of 20,000 tons of antimonial lead, worth about $4,600,000, compared with 24,038 tons in 1916. The production of desilverized lead of domestic origin, exclusive of desilverized soft-lead, is estimated at 297,000 tons against 316,469 in 1916; and that of desilverized lead of foreign origin at 59,000 tons compared with 18,906 in 1916. The production of soft lead from Mississippi Valley ores is estimated at 243,000 tons, compared with 235,759 tons in 1916. The total production of desilverized lead and soft lead from domestic ores was thus about 540,000 tons, valued at $99,000,000, compared with 552,228 tons, valued at $76,207,000 in 1916, a loss of about 12,000 tons. The loss of nearly 20,000 tons in domestic desilverized lead was partly offset by a gain of 7000 in domestic soft lead and much more than made up by a gain of 40,000 tons in desilverized lead of foreign origin. The final figures for the production of soft lead will show an increase of a few thousand tons over those here given, for the smelters and refiners of argentiferous lead undoubtedly treated some soft lead ore from the Mississippi Valley which in preliminary estimates is not distinguished from silver-lead ore.

IMPORTS AND EXPORTS. The imports of lead are estimated at 20,000 short tons of lead in ore, valued at $2,200,000; 37,000 tons of lead in base bullion, valued at $5,100,000; and 4400 tons of refined and old lead, valued at approximately $8,000,000, compared with 35,330 tons in 1916. Of the imports in 1917 about 48,000 tons came from Mexico, against 25,919 tons in 1916.

The exports of lead of foreign origin smelted or refined in the United States showed considerable increase. They are estimated at 17,000 tons, worth $3,000,000, against 9880 tons, in 1916. These figures do not include the lead in foreign lead manufactures exported with benefit of drawback, which amounted to 3227 tons in the first half of 1917. For the last four years notable quantities of domestic lead have been exported to Europe, and the total for 1917 is estimated at 48,000 short tons, valued at $8,300,000, compared with 100,565 tons, valued at $13,508,203 in 1916.

LEAGUE OF NATIONS. See INTERNATIONAL PEACE AND ARBITRATION.

LEAGUE TO ENFORCE PEACE. See INTERNATIONAL PEACE AND ARBITRATION.

LEATHER. The leather industry in the United States in 1917 was marked by large exportations of leather and leather products, but a less active domestic trade. Shoe manufacturers in the previous years had bought a large amount of leather and were apparently satisfied as regards the needs of their plants. On the other hand, the United States came into the market as an active buyer for leather needed for war purposes, especially sole, harness, and strap leathers, and the entire output of many plants was being taken by the government. Prices were high during the year, but no great increases were contemplated in the immediate future.

With the demand for leather, the industry in various distant countries received a considerable impetus from the war. In British South Africa, manufacturers were endeavoring to increase their output and raise the standard of their products, and not only were they shipping sole leather to Great Britain, but also upper leather of high grade. The Government was dipping cattle in order to reduce the damage wrought by the cattle tick, and otherwise was encouraging the industry.

In Brazil, the production of skins available for export was practically being absorbed entirely by the United States, and this industry had grown from $500,000 in 1913 to more than $10,000,000 in 1916, the total export of hides from Brazil in the latter year being $17,156,668. While Brazil produced a considerable amount of hides, yet the country had but comparatively few tanneries, and the better grades of leather were imported from abroad.

In China, the year 1916 was a profitable one for Chinese dealers in hides and skins, and high prices were realized. Fifty-five per cent of the total export cowhides, amounting to $40,000,000, went to the United States, 25 per cent to Japan, and 12 per cent to Italy. China exported some 10,000,000 goat skins, 95 per cent of which went to the United States, while there was a considerable increase in the horse, ass, and mule hides shipped as well as in the amount of wool.

In the leather market, an interesting topic of discussion during the year was the future of the German industry. A great amount of the higher grade leathers had been produced in Germany, and with this supply cut off, consumers in other countries were compelled to make various arrangements. In some cases, permanent sources of supply were developed together with the requisite tanning materials and facilities of manufacture, so that the reëntrance of Germany into this market after the war would be a distinctly improbable event without discriminating tariffs or commercial restrictions.

An attempt was being made to secure a uniformity in the reports of leather analysis and to standardize the American product. The United States army specifications issued October 16, 1917, stated the following requirements:

"Moisture not to exceed 14 per cent, ash not to exceed 2 per cent, oil and grease not to exceed 5 per cent, nor less than 2 per cent, free acid not to exceed 1 per cent, water solubles not

LIVE STOCK SLAUGHTERED AT PRINCIPAL POINTS, YEARS 1916 AND 1917

From *Hide and Leather*, Chicago

	Cattle		*Calves*		*Sheep*		*Hogs*	
	1917	*1916*	*1917*	*1916*	*1917*	*1916*	*1917*	*1916*
Chicago	2,374,400	2,028,504	578,673	495,079	2,758,802	3,461,619	5,949,524	7,783,497
Kansas City	1,424,929	1,149,052	252,198	151,492	885,552	1,177,885	1,978,428	2,527,271
Omaha	996,385	842,901	.....	.....	1,878,240	1,869,557	2,001,006	2,391,177
St. Joseph	414,781	306,487	43,771	24,637	471,566	628,883	1,833,371	2,106,609
Ft. Worth	583,443	321,096	407,880	152,539	144,810	189,343	796,680	867,050
Indianapolis	224,282	167,590	45,470	40,545	20,622	31,316	1,326,216	1,511,221
Oklahoma City	354,493	164,854	68,470	46,144	29,115	71,962	538,883	732,002
Wichita	126,192	85,984	.....	.....	6,506	3,506	421,317	563,886
Sioux City	271,844	212,951	24,005	19,844	169,630	216,261	1,257,388	1,307,031
Totals	6,770,749	5,279,420	1,420,462	930,280	5,864,848	7,644,832	16,102,813	19,789,744
Increase	1,491,329	.....	490,182	.....	.....	.....	.....	.....
Decrease	.....	.....	.....	.....	1,779,989	.....	3,686,931	.....

Omaha and Wichita count calves as cattle.

to exceed 30 per cent, glucose and magnesia present (the latter calculated as epsom salts) shall not be more than 50 per cent of the total amount of glucose and salts. That in form of bends, backs, or sides the leather shall be sampled by taking a cutting along the edge of the back, this sample to be two inches wide and not over eight inches long; the centre point of sample shall be a distance of twenty-four inches from the root of the tail."

See Stock Raising.

LEEWARD ISLANDS. A British colony; the most northerly group of the (British) Lesser Antilles. The five constituent presidencies, with their area and their population, are as follows:

	Sq. M.	*Pop.*	*Capital*
Antigua *	171	82,265	St. John †
Montserrat	33	12,196	Plymouth
St. Kitts & Nevis ‡.	150	43,303	Basseterre
Dominica	304	33,863	Roseau
Virgin Islands.....	58	5,562	Roadtown
Total...........	716	126,318	

* With its dependencies, Barbuda and Redonda (62½ square miles, 991 inhabitants). † Capital of the colony. ‡ Including Anguilla (35 square miles, 4075 inhabitants).

Elementary education in the islands is denominational, except in Dominica, the denominations receiving grants-in-aid. Government savings banks are established in all the presidencies. There is no railway or internal telegraph. Cable connection exists with the continents. Statistics for trade and finance for the colony are given below for four years:

	1910-11	*1913-14*	*1914-15*	*1915-16*
Imports	£567,817	£558,362	£628,812	£584,518
Exports	558,165	577,256	621,404	670,101
Revenue *	164,875	174,456	169,827	162,289
Expenditure *.	159,263	171,128	189,870	187,515
Debt	.....	.....	261,450	261,250

* Not including government grants.

LEGISLATION IN 1917. This article summarizes briefly the more important measures passed by the 64th and 65th Congresses and of the State Legislatures, in such part of these sessions as cover 1917. The work of the State Legislatures is treated more fully in the several State articles in the sections entitled *Legislation.*

The measures passed by Congress during 1917 related chiefly to the war with Germany, and these measures are, for the most part, treated much more fully in the several State articles covering aspects of the war such as United States and Germany, Food Control, Shipping, Army and Navy, and the like.

In addition to these acts relating to the war, others were passed, which, under different conditions, would have attracted much wider attention. Among these was an act passed by the 65th Congress increasing the members of the Interstate Commerce Commission from seven to nine, and giving it authority to divide itself into divisions, and to assign any matter within its jurisdiction to any division for consideration and final action with the same powers as those possessed by the commission itself. It passed an amendment to this act providing that until January 1, 1920, no increased rate shall be filed except after approval by the commission, with or without hearing. See Railroads.

The 64th Congress provided a civil government for Porto Rico and granted citizenship to all citizens of the island, and all natives who were temporarily absent therefrom April 11, 1899, and have since returned and are not citizens of any foreign country (see Porto Rico). The same Congress also provided a temporary government under an officer of the army or navy for the West Indian Islands, known as the Virgin Islands, purchased from Denmark. The immigration bill, passed by Congress and vetoed by President Wilson, only to be repassed over his veto, is considered in the article Immigration and Emigration.

War Legislation. The chief attention of the 64th and 65th Congresses in 1917 was devoted to the passage of war measures. They included the formal declaration of war approved April 6, 1917; revenue bills authorizing the issuance of bonds; several important measures relating to the purchase of ships and war materials; measures providing for the enlargement of military and naval establishments and for aviation; acts providing for the control and administration of food products; a measure providing for punishment for espionage and measures relating to war risk insurance.

State Legislation. Under this heading are treated the more important phases of legislative enactment in the different States during 1917.

Organization and Administration of Justice. The California legislature passed a constitutional amendment providing for the organization of the courts throughout the State. The effect of the adoption of the amendment would be to give the legislature unlimited power to provide in its discretion for the administration of the judicial business of the State. The legislature of North Dakota passed an amendment to the State constitution providing that the opinion of four out of five judges of the Supreme Court should be necessary to declare a law unconstitutional. The West Virginia legislature passed several measures providing for the better protection of judges against personal violence.

The legislature of Oregon enacted a measure creating in the court of justice of the peace a small claims department with jurisdiction over amounts not exceeding $20. The Minnesota and Colorado legislatures also passed measures toward the establishment of the so-called "poor man's courts."

Many of the State legislatures including those of New York, Wisconsin, New Jersey, Maine, North Dakota, and North Carolina passed measures providing for greater restrictions upon marriage, known popularly as eugenics laws.

Nearly all the State legislatures passed measures relating closely to the state of war with Germany. In New York a measure was passed providing for the registration of aliens, another making provision for the census of man power and war resources. A similar census was also authorized in Massachusetts. Legislation to protect the food supply was passed in a number of the States: Maine, Wisconsin, Massachusetts, Connecticut, New Jersey, Pennsylvania, Maryland and New Hampshire.

A State council of defense to coöperate with the national council was provided for in California, Maryland, New York, and Pennsylvania. Provisions for seizing buildings, railways, and other equipment or supplies useful for military purposes were made in Maine and Massachusetts.

Similar power, limited to personal property, was provided in Wisconsin.

One of the most interesting of the acts relating to the war was that known as the "lazy man's law," enacted in Maryland. By this measure all able-bodied men between the ages of eighteen and fifty, not usefully employed, may be required to register and to work in some public or private employment.

Acts dealing with espionage and sedition were passed by the legislatures of Vermont, New York, Minnesota, and Iowa.

Nearly all the legislatures passed measures providing for reorganization of the State militia, to make it conform to the requirements of the national defense and draft acts. In several cases, provision was made, giving to the governor power to enroll all able-bodied men between eighteen and forty-five and to draft them into service. The Oregon law makes failure to respond to the governor's draft desertion, punishable by a military tribunal. The North Carolina acts provided that whites and blacks shall not be compelled to serve in the same organization, and blacks shall be under the command of white officers.

In several of the States provisions were made that public officers and employees shall not lose their places or be prejudiced in their rights to promotion because of absence in military service. Measures of this nature were passed by New York, Pennsylvania, Massachusetts, Maine, Vermont, and other States.

Crime and Its Punishment. Several interesting provisions were made by the State legislatures for the reformation and instruction of inmates of State institutions, and for the improvement of their mental and physical conditions. Several of the States made provisions for farms to be conducted in connection with these penal institutions. The legislature of Idaho provided for extending the benefits of university extension departments to convicts. In Maine custodians are required to give psychopathic examinations to prisoners and when necessary to transfer them to State institutions for further examination. Measures relating to this general subject were passed by the legislatures of North Carolina, Illinois, North Dakota, Oregon, Rhode Island, Tennessee, New Jersey, California, and New York.

State Constitutions. Several of the State legislatures provided for the calling of constitutional conventions to revise the State constitutions. These included Idaho, Illinois, Tennessee, Nebraska, and North Carolina. New Hampshire and Indiana provided for the election of delegates to a convention without submitting the question to the voters. The Indiana act was declared unconstitutional.

State Governments. Measures looking toward the more economical administration of State government were passed by many State legislatures, including Oregon, North Carolina, Vermont, Delaware, West Virginia, New Jersey, Minnesota, New York, Utah, Kansas, South Dakota, Tennessee, New Mexico, Nebraska, Maine, and Michigan. See Electoral Reform.

For legislation relating to other special subjects see articles on Liquor Regulation, Labor Legislation, Child Labor, Workmen's Compensation, Taxation, Insurance, Railways, Education in the United States, Banks and Banking.

LEHIGH UNIVERSITY. A non-sectarian institution for the education of men at South Bethlehem, Pa. In the fall of 1917 there were 651 students and 79 members of the faculty. Volumes in the library numbered 142,353. Productive funds in 1917 amounted to $2,250,000 and the income to $106,272. The university was founded in 1866. President, Henry S. Drinker, E.M., LL.D.

LEIPZIGER, Henry M. A prominent educator in New York City, who died on December 1, 1917. He was born in England on December 29, 1854, but came to the United States at an early age. He graduated from the College of the City of New York in 1873 and received the degree of Ph.D. from Columbia University in 1888. He was very much interested in the Jewish immigrants who came to America and devoted a great deal of time to the problem of assimilating them into the social and industrial life of their new home. In 1884 he organized the Hebrew Technical Institute, which was one of the first manual training schools in America. For seventeen years he was chairman of the library committee of the Aguilar Free Library, which later was incorporated with the New York Public Library. During that time he founded the public lecture system of which he became chairman in 1890. This was his greatest field of endeavor.

LELAND STANFORD JUNIOR UNIVERSITY. A non-sectarian co-educational institution of learning located at Palo Alto, Cal. (the post office is Stanford University, Cal.). In the fall of 1917 there were 1500 members of the student body and 225 instructors; many of the latter engaged in war service. Volumes in the library numbered 244,273. Productive funds in 1917 amounted to $24,424,432 and the income to $1,042,529. During the year the Thomas Welton Stanford Art Gallery was completed. The Stanford Naval Base Hospital Unit, composed largely of members of the faculty of the medical school and of nurses associated with the Stanford Hospital, entered active service in France. The four quarter system was inaugurated in the fall of 1917. Leland Stanford Junior University was founded in 1891 by Leland Stanford and his wife in memory of their son. President, Ray Lyman Wilbur, M.D.

LENINE, Nikolai. One of the leaders of the Bolshevik movement in Russia. Lenine's real name is Vladimir Ilyitch Uulyanoff and he was born at Simbirsk, on the Volga, about 1870. He was of noble birth. He became prominent shortly after 1890 as the leader of the radical Social Democrats, who insist on the literal application of the Marxian theories, rather than the more nationalistic view of the Social Revolution party, headed by Kerensky (q.v). He was elected to the Second Duma shortly after the revolution of 1905, but was later exiled when the reaction set in. At the beginning of the present war he was in Cracow, and was interned as an enemy alien, but was released and allowed to go to Switzerland, where a group of Russian revolutionists had collected. After the revolution the provisional government made an agreement with the German government, by which the Russians in Switzerland were allowed to return to Russia in return for the release of some German civilian prisoners. He reached Petrograd just after the pacifists had caused the resignation of Miliukoff, and at once began to preach immediate peace and general confiscation. He published a newspaper, the *Pravda*, bitterly attacking both Germany and France. The government feared to arrest him because of its effect on the pacifistic element. He gained in power, but was compelled to go into hiding after the abortive attempt to overthrow the government in July. For his subsequent career see RUSSIA, *History*. Lenine was also an author on socialistic subjects, his most important work being, *The Development of Capitalism in Russia*.

See WAR OF THE NATIONS, *The Diplomacy of the War;* also RUSSIA, *History*.

LEPROSY. Chaulmoogra oil has long been known as the most reliable drug for the treatment of leprosy, the only difficulty being that it is so repulsive when taken by mouth that patients cannot take it for long periods of time. Heiser reported in 1914 excellent results in a series of cases treated at the Leper Colony at Culion, Philippine Islands, with chaulmoogra oil given hypodermically with camphorated olive oil and resorcin. Heiser's formula was, chalmoogra oil 60 c.c., camphorated olive oil, 60 c.c., and resorcin 4 gm.; this mixture being injected, after being sterilized, under the skin of the arm or leg.

Bercovitz reported another series of fourteen cases treated in Hoi How, Hainan, China, with Heiser's formula. Weekly doses of 1 c.c. were given for the first three weeks and the amount was gradually raised until it reached 3 c.c. There was a slight reaction after the first injection, but not subsequently. The mixture was promptly absorbed. Patients were also given sodium bicarbonate baths three times a week and pills of arsenic and iron during alternating weeks. The cases reported were under treatment nine months. Marked improvement began in about a month. Malaise and lack of energy were less marked, the appetite was increased, and the general systemic condition improved. The tubercular forms of leprosy were found to respond to treatment earlier than the anesthetic forms, and anesthetic areas in both types of the disease became hypersensitive and in some of the patients there was a return of the tactile sensation. Large ulcers healed and were replaced by clean, white scars. Microscopically it was shown that the lepra nodules underwent fibrosis.

Coghill also reports, from the Yaba Leper Asylum, similar favorable results with Heiser's formula. Here the mixture was given intramuscularly and the dose rapidly increased until 6 to 8 c.c. were being administered. There was rapid healing of even large and deep ulcers of many years' duration. Absorption of the nodules and a return of sensation were also noted by Coghill.

The bill providing for a national hospital for lepers finally passed the Senate. It was previously passed by the House on May 15, 1916, but came before the Senate again on January 25, 1917, and was made a law. The bill provides for an addition to the pay of any medical officers detailed for service in the leper hospital of one-half of their regular pay. The need of a national leper hospital has long been felt, since the number of lepers in one State is too small to justify the establishment of a State institution, and the popular dread of leprosy has often led to cruel and inhuman treatment of the victims of this disease in the absence of proper provision for their care.

The Island of Sardinia has provided a pavilion in the public hospital at Cagliari for lepers in the contagious stage, and compulsory notification of leprosy is enforced, together with careful surveying of the conditions in the homes of lepers and the removal of children from a family where there is a leper.

O. E. Denney, chief of the Culion Leper Colony, Philippine Islands, has made an exhaustive study of the disease as occurring in this region. During the ten years since the beginning of segregation of lepers in the islands, 10,425 lepers were admitted to the colony. The records show an average duration of the disease to be 7.332 years. The longest authentic duration was forty-eight years. Among the lepers in the colony, 357 babies were born. Of these, 166 have died; 24 being stillborn, 59 dying before reaching the age of one month, 40 before the age of three months, and the others dying in less than three years. There were 357 babies released after they had been shown to be non-leprous. Of the 154 children remaining in Culion, 16 are lepers. The distribution of leprosy among the different tribes is of interest. Among the Visayans there were 5338 cases admitted, or 0.17 per cent of the population; among the Tagalogs 1997, or 0.14 per cent.; among the Ilocanos 1547, or 0.19 per cent; the Bicolanos contributed 1184, or 0.21 per cent of the population; the Pampangos 171, or 0.06 per cent; the Pangasinans 100, or 0.01 per cent, and the members of small tribes and foreigners 88.

LESUEUR, W. D. A prominent Canadian writer who died in September, 1917. He was born in 1840 and was educated at the University of Toronto and Queen's University, Kingston. In 1856 he entered the Canadian Civil Service in the Postal Department and was the secretary from 1888 until 1902, when he retired. He was a prolific writer on historical and other intellectual subjects and his works rank high among Canadian authors. He was honorary secretary of the Royal Society of Canada from 1908 to 1911 and then its president. Among his books are: *Life on the Frontier* in "The Makers of Canada Series"; *A Defense of Modern Thought; Evolution and the Positive Aspects of Modern Thought;* and *The Development of Responsible Government in Canada.*

LEVY (JOSEPH) LEONARD. An American Jewish clergyman, a leader of the radical movement in his church, died in Pittsburgh, Pa., April 26, 1917. He was born in London, England, in 1865, graduated with honors at London University in 1884, and made further studies at the University of Bristol, in which city he was pastor from 1885 to 1889. Then he came to the United States and settled in Sacramento, Cal. From 1893 to 1901 he served the Keneseth Israel congregation in Philadelphia and thereafter till his death that of Rodeph Shalom in Pittsburgh. In advocacy of liberal Hebrew views he lectured all over the United States and also in England, Scotland, and France. His writings include: *A Book of Prayer, A Graduated Textbook of Religion, Nineteenth Century Prophets, Founders of the Faiths, Old Arrows from New Quivers*, and sixteen volumes of sermons. Dr. Levy was prominent in bettering social conditions in Pittsburgh, and he was trustee of various educational and philanthropic institutions. The University of Pittsburgh conferred on him the degree of D.D. He was vice-president of the Eastern Council of Reform Rabbis.

LIBERIA. An independent negro republic of western Africa, occupying that part of the coast of North Guinea which is between the rivers Cavally and Mano, a distance of about 350 miles, with an area variously estimated at between 35,000 and 41,000 square miles, and extending to the interior to latitude 8° 50′, a distance of 250 miles from the seaboard. It was founded by the American Colonization Society in 1820, and has been recognized by the United States and the European powers since 1847 as an independent state. The population numbers between 1,500,000 and 2,000,000, including about 12,000 Americo-Liberians. The principal exports are coffee, cacao, palm-kernels, palm-oil, ivory, piassaba, rubber, and camwood. The chief imports, cottons, haberdashery, salt, rice, provisions, arms and ammunition, tobacco, hardware, glass and earthenware, rum, gin, timber, and beads.

There are thirteen ports of entry along the 350 miles of coast: Robertsport, Monrovia, Marshall, Grand Bassa, RiverCess, Greensville, Nanna Kroo, Harper, Half Cavalla, Jenne, Webo, GrandCess, and Garraway. The executive power is vested in a president elected for four years, assisted by a ministry. There are two houses of legislature, the Senate, with eight members elected for four years, and the House of Representatives with fourteen members elected for two years. The president, Daniel Edward Howard, was reëlected for the period 1916-20.

Liberia was nearing starvation, as a result of the effects upon the country of the European war, according to official dispatches received in Washington, February 14. The trade of the republic had been conducted almost entirely by German residents, who controlled both exports and imports, but since the war their operations had been first restricted, and later altogether stopped by British war measures. The Liberian government was seeking an American auditor, having decided upon governmental reforms, and being confronted with the necessity of economizing. The country already had an American receiver-general of customs, H. F. Whorley, selected by President Wilson for the post from the Insular Bureau of the War Department. The Liberian government was seeking American officers to command its frontier forces, its borders being subject to continual raids by uncivilized tribes; and it also desired to employ a road building expert. Liberia broke off relations with Germany on May 8. This was regarded as important because many cables had their points of landing in Liberia and it had been used by Germany as a base against the British.

LIBERTY LOANS. See FINANCIAL REVIEW; UNITED STATES AND THE WAR.

LIBERTY MOTOR. See AËRONAUTICS.

LIBERTY TRUCK. See AUTOMOBILES.

LIBRARY ASSOCIATION, AMERICAN. The thirty-ninth annual meeting of the association was held at Louisville, Ky., June 21-27, 1917. Walter L. Brown, the president, presided, and read a paper entitled "The Changing Public." Other papers read were: "Democracy in World Politics," by Shailer Matthews; "Books in Camp, Trench, and Hospital," by Theodore Wesley Koch; "Books for the Russian Prisoners of War in Germany," by C. T. H. Wright; "Coöperation in War Work between the Young Men's Christian Association and the American Library Association," by William Moore; "The Corporation School Movement: Training Men during Business Hours," by J. W. Dietz; "Chinese Books and Libraries," by Walter T. Swingle; "The County Free Library as Operated at Riverside," by Joseph F. Daniels; "A Programme for Library Advertisement," by Carl Hunt; "The Gist of the American Library Association Library Publicity Survey," by Willis H. Kerr; "Library Commission Publicity," by Elizabeth C. Earl; "A Publicity Expert for Libraries," by C. H. Compton; "Standardization of Libraries and Certification of Librarians," by P. L. Windsor; "Agricultural Extension Work and the Opportunity It Offers to Agricultural College Librarians," by George A. Deveneau; "Secondary Education in Library Work," by Jessie Welles; "Preparedness to Meet New Educational Demands," by Sarah C. N. Bogle; "The Library School of the Future," by A. S. Root; "The Association of American Library Schools," by P. L. Windsor; "The Reading of the Adolescent Girl," by Louise M. Dunn; "The Book Shop for Boys and Girls," by Annie C. Moore; "The Colored Branches of the Louisville Public Library," by Bernice W. Bell; "How to Raise the Standard of Literary Appreciation in High Schools," by Marion L. Horton; "Organizing a New High Schoool Library," by Clara E. Howard; "Problems Met in Reorganizing a High School Library," by Mary H. Poooley; "The Hows and Whys of Admission Slips," by A. M. Hardy; "Classification Making," by A. L. Voge; "Principles of Classification," by C. W. Andrews; "Classsification Making," by Charles A. Flagg; "Classification," by J. C. Bay; "The Problem and Theory of Library Classification," by Henry F. Bliss; "Some Cataloguers Reference Books of Recent Years," by L. R. Blanchard; "The Organization of a Cataloging Department," by Minnie E. Sears; "Studies of Departmental Libraries at the University of Chicago," by J. C. M. Hanson; "A Plan for a Census of Research Resources," by C. W. Andrews; "The Return of Coöperative Indexing," by E. C. Richardson; "Library Legislation," by E. L. Craig; "Should Libraries be Under the General Civil Service of the State or Have a Separate Civil Service Organization?," by W. D. Johnston; "The State as a Unit for Library Extension," by Minnie W. Leatherman; "The County as a Unit for Library Extension," by Harriet C. Long; "The Library District as a Unit for Library Extension," by John Lowe; "The Township as a Unit for Library Extension," by Mayme C. Snipes; "A Flexible Book Collection," by Jessie Welles; "The University Press in Relation to the Library World," by G. P. Winship.

The officers of the association are: President, Walter L. Brown, Buffalo Public Library; first vice-president, Harrison W. Craver, Library of the Engineering Society, New York; second vice-president, George H. Locke, Toronto Public Library; treasurer, Carl B. Roden, Chicago Public Library; secretary, George B. Utley, 78 East Washington Street, Chicago.

The American Library Association conferences are divided into a system of sections as follows: College and Reference; Trustees; Catalogue; Library Work with Children; Professional Training; Agricultural Library Section; School Library Section.

Four national organizations are affiliated with the American Library Association: National Association of State Libraries; League of Library Commissions; American Association of Law Libraries; and Special Libraries Association. The publishing board of the association publishes the *A. L. A. Booklist* (edited by May Massee), and the *Official Bulletin*, and also in 1917, put out *Recent French Literature*, compiled by Sarah Graham Bowerman; *Mending and Repair of Books*, by Margaret W. Brown, revised by Gertrude Stiles; *League of Library Commissions Handbook, 1916*, compiled by Henry M. Sanborn; *Manual for Institution Libraries*, compiled by Carrie E. Scott. The following publications have been reprinted: *Books for Boys and Girls*, by Caroline M. Hewins; *Government Documents in Small Libraries*, by J. I. Wyer, Jr.; *Making Maps Available*, by Beatrice Windsor.

LIBRARY OF CONGRESS. On June 30, 1917, the end of the fiscal year, the library contained 2,537,922 books, a gain over the preceding year of 85,948; 158,480 maps and charts, a gain of 4280; 795,749 volumes and pieces of music, a gain of 25,501; and 397,945 prints, a gain of 5040. War continued to keep down the number of accessions and there was a decrease from 88,101 to 85,948 in the number of additions, somewhat below the average annual number increase over the period of the preceding 18 years. Gifts aggregating 12,100 volumes from thousands of unofficial sources were received. Among the most important was a collection of Whistleriana, presented by Mr. and Mrs. Joseph Pennell, the authorized biographers of James McNeil Whistler. Another was a copy of *Letters of Thomas Burnet to George Ducket, 1712-1722*, edited by David Nichol Smith, presented by the Marquess of Crewe. There were acquired also several desirable specimens of fifteenth century printing; four rare Savonarola tracts of special interest on account of their fine Florentine woodcuts; an excellent copy of the first Protestant Bible in the French language; and important works relating to naval architecture. The most important accessions in the Division of Manuscripts includes the papers of Charles Thompson, secretary of the Continental Congress during the whole period of its existence; some of the papers and correspondence of Robert Morris, which have been added to the Morris collection; forty-three additional documents of James Madison; and many books containing trade or commercial information of earlier United States history; papers of importance in the social history of America; papers of Andrew Jackson Donelson, nephew and private secretary to Andrew Jackson while he was president. The accessions in the Division of Documents include important periodicals from Japan and China, among the latter some important railroad documents.

LIBRARY PROGRESS. WAR WORK OF THE AMERICAN LIBRARY ASSOCIATION. Shortly after the declaration of war the President's Commission on Training Camp Activities called on the American Library Association to take charge of the organization of all attempts at furnishing books and magazines to soldiers in the army and navy. That association at once created a preliminary committee on planning the proposed organization, which reported at the Louisville Conference in June through Dr. Herbert Putnam, Librarian of Congress, its chairman, a scheme for an A. L. A. War Council. This body began work at Louisville and continued until December, when there was effected a change from a large group of persons in many cities to a small directing body at Washington with the Librarian of Congress at its head, under the name War Service of the American Library Association. The council perfected plans for camp libraries and carried through an ambitious campaign for funds for their building and maintenance. The last week in September was set aside as "war library week" and a united effort on the part of librarians and interested citizens all over the country resulted in raising a sum which before the end of the year reached over one and one-half million dollars. The largest single contribution was from the Carnegie Corporation, which gave $320,000 for the erection of library buildings in each of the 32 cantonments.

Books and magazines were solicited by practically every library in the United States, sent to various designated distribution centres, and thence to the several camps as these were ready to receive them. Librarians were appointed for the camps, generally far in advance of the completion of the buildings. They were drawn from the younger men of experience in library work. The response to the call for books was very generous and as a rule showed discrimination in the selection. About 300,000 volumes were donated before the end of December, 1917, although, as many camps had not completed their library buildings, a great number were held at the distribution centres. Large sums were also used in direct purchase of books to supplement those given. Before the camp libraries were built, the Y. M. C. A. was used to provide books for the soldiers, and will be used as distributing stations in the future.

Provision has also been made for supplying books to the navy, the coast-patrol, and to the American soldiers in France. This last phase of the work will naturally grow to larger proportions in 1918.

LIBRARY BUILDINGS. Despite high prices of materials and labor a considerable number of important buildings were completed in 1917. Chief of these were the large public library structures for the cities of San Francisco, Indianapolis, St. Paul, and Montreal. Each of these buildings is notable, and together they constitute an important group illustrating the progress of design in libraries. Amherst College and Notre Dame University also completed new buildings for their libraries.

LIBRARY LEGISLATION. No unusual library legislation was passed by any of the State legislatures in 1917. Certain States (Michigan, Texas, North Dakota) passed laws enabling an extension of county library systems. A similar bill passed the Ohio legislature, but was vetoed by the governor.

LIBRARY LITERATURE. Important additions to the rather small stock of professional manuals were the new editions of the *League of Library Commissions Handbook*, issued by Henry N. Sanborn, secretary of the league, through the

A. L. A. Publishing Board in Chicago, and a *Manual for Institution Libraries* by Carrie E. Scott, from the same body. The American Library Institute issued its *Papers and Proceedings* for 1916, also through the A. L. A. Publishing Board. These combine the substance of the papers at its meeting at Atlantic City in the spring of 1916. A monograph on the *British Museum Library* by G. B. Rawlings (White Plains, H. W. Wilson Co.) is a popular history and description of the largest of the world's libraries. F. A. Ebert's, *The Training of the Librarian*, translated by Selma Nachman from the 1820 German edition, appeared in the "Librarian's Series," edited by J. C. Dana and H. W. Kent (Newark, The Elm Tree Press). Mr. Dana also brought out two additional parts of his *Modern American Library Economy:* (1) *How to Use a Library*, and (2) *The Picture Collection*, new edition (Newark, The Elm Tree Press). A. E. Bostwick published a new edition of his *The American Public Library* (N. Y., Appleton), which bids fair to remain the standard general treatise on this topic. The most ambitious bibliographical publication coming from an American library appears to be the *Catalogue of the Petrarch Collection* of the Cornell University Library, by Miss Mary Fowler, issued by the Oxford University Press. Perhaps of more immediate value was the third edition of Kroeger's *Guide to the Study and Use of Reference Books*, edited by Isadora G. Mudge, revised throughout and much enlarged, issued by the A. L. A. Publishing Board (Chicago).

NECROLOGY. 1917 took a heavy toll of librarians of distinction. Henry E. Legler, the able head of the Chicago Public Library; Wm. I. Fletcher, a veteran of the profession, a charter member of the American Library Association, and long librarian of Amherst College; Henry M. Utley of Detroit, likewise a veteran and for many years the leading figure among Michigan librarians; James L. Gillis, State Librarian of California, a leader among State librarians; Anderson H. Hopkins, formerly head of the Pittsburgh library; and George W. Harris, librarian emeritus of Cornell, are the most prominent of a long list.

LIBYA. An Italian possession on the Mediterranean coast of Africa, composed of Tripoli and Cyrenaïca. It lies between Tunis and Algeria on the west and Egypt on the east. As a result of the Turco-Italian War, Tripoli, hitherto a vilayet of the Ottoman Empire, was proclaimed at Rome, November 5, 1911, together with Cyrenaïca, a province of the kingdom of Italy. The area, with Cyrenaïca (or Bengazi, or Barca), is estimated at 405,800 square miles, and the population at about 1,000,000, mostly Berbers, but with numerous Jewish colonies. The city of Tripoli, with 75,000 inhabitants, is the capital of Tripoli; Bengazi, with 30,000, of Bengazi; both Mediterranean ports.

The total commerce of the country is reported for 1915 as follows: £2,004,730 imports, £212,073 exports (esparto, hides and skins, ostrich feathers, sponges, live animals, wool, cereals, etc.). The revenue has been derived from taxation on the wealth of the individual, and from tithes; and amounted in 1916-17 to £135,288,640, balanced by the expenditure. Large state subventions are necessary.

LIFE INSURANCE. See INSURANCE.

LIGHTHOUSES. The number of aids to navigation maintained by the United States Lighthouse Service on June 30, 1917, is shown in the accompanying table:

Class	*Total 1916*	*June 30, 1917*
Lighted Aids:		
Lights (other than minor lights)	1,708	1.708
Minor lights	2,920	2,970
Light-vessel stations	58	53
Gas buoys	512	545
Float lights	132	144
Total	5,325	5.420
Unlighted Aids:		
Fog signals	532	537
Submarine signals	52	51
Whistling buoys, unlighted	83	81
Bell buoys, unlighted	238	241
Other buoys	6,657	6,846
Day beacons	2,061	2,047
Total	9,623	9,803
Grand total	14,948	15,223

During the fiscal year ended June 30, 1917 there was a net increase of 275, the total number of aids to navigation maintained by the Lighthouse Service including five fog signals, 33 lighted buoys, 189 unlighted buoys, and 62 minor lights, including 12 float lights. At 39 stations fixed lights were changed to flashing or occulting, and for 17 lights, including 1 light vessel, the illuminant was changed to incandescent oil vapor, while at 26 lights, including 4 light vessels, the change was made to acetylene, and at 13 lights to electric incandescent lamps, and at 1 light to oil gas.

As shown in the table there were on June 30, 1917, maintained by the Lighthouse Service 15,223 aids to navigation. Among the more important installations of the fiscal year was the new third-order light station with a flashing white oil-vapor light and a first-class air siren at Cape St. Elias, Kayak Island, Alaska; a new light vessel, *No. 101*, off Cape Charles, Va., in place of the old vessel, *No. 49*, and a new light vessel, *No. 102*, took the place of *No. 43* at Southwest pass entrance to the Mississippi River. On the Brunswick Light Vessel, *No. 84*, off the coast of Georgia, the illuminating apparatus was changed from two fixed white to one flashing white light, and a similar change was made on Handkerchief Light Vessel *No. 3*, Nantucket Sound, Mass. Fog signals were established at numerous points on the Great Lakes and on the Pacific Coast, while a number of important lighted buoys were placed on all coasts. On September 25, 1916, a bronze tablet was unveiled at Boston Light Station commemorating the two hundredth anniversary of its establishment, and the beginning of lighthouse work in America.

The important extension of the work of the Lighthouse Service in Alaska continued, and at the close of the fiscal year 1917, there were 416 aids to navigation including 152 lights, 7 gas buoys, or an increase of 122 lighted aids since June 30, 1910. In 1916, there were but 388 aids of all classes. The light and fog-signal station at Cape St. Elias, referred to in the YEAR BOOK for 1916, was completed and lighted for the first time on September 6, 1916. A new lighthouse tender *Cedar* was completed and in the summer of 1917 was assigned to duty in Alaska. The act of June 12, 1917, made a further appropriation of $60,000 for lighthouse work in Alaska. Special construction was involved in the case of concrete piers for four lights in the lower part of the Detroit River Channel, which was subject to heavy ice pressure. These piers were either built in timber cribs, or were formed by concrete caissons sunk in place on sites that had been dredged clean, and then covered with four-inch stone. The concrete caissons were built in the dry and were floated into place. The work also required the construction of six concrete piers in the cofferdam section of the channel.

An interesting volume on *Lighthouses and Lightships of the United States* by George Barclay Putnam, commissioner of lighthouses, was published during the year.

LILIUOKALANI, LYDIA KAMEKEHA. "Queen Lil," as she was popularly called, died on November 11, 1917. She was born on September 2, 1838, and was for a time Queen of the Hawaiian Islands. She succeeded her brother to the throne in 1891, but was deposed in 1893 because of her attempt to annul the liberal constitution and because she favored all sorts of reactionary laws. She married an American, John O. Loomis, a native of Boston. An attempt to regain the throne was frustrated in 1894. The deposed Queen was voted a pension of $4000 a year by the newly established Hawaiian Legislature, and she was permitted to receive the income from a sugar plantation of 6000 acres. For fifteen years after her deposition she made vain efforts to have her kingdom restored to her and to have 1,000,000 acres of crown land, taken over by the government, declared her own personal property. She was unsuccessful in this also. In 1908 she made a claim on the United States government for $450,000, but the Court of Claims decided against her. She was granted a pension by Congress of about $40,000. For some time she made her residence in San Francisco and stated that she was very much pleased with the rapid progress her former subjects were making under American rule. The queen was well known as the author of more than 100 Hawaiian songs, and the book, *Hawaii's Story*, which is a history of the islands.

LINCOLN SCHOOL. See EDUCATION IN THE UNITED STATES; and COLUMBIA UNIVERSITY.

LINGUISTICS. See ANTHROPOLOGY.

LIQUOR REGULATION. The Supreme Court, on January 8, handed down a decision confirming the constitutionality of the Webb-Kenyon Law forbidding the shipment of liquors into any State where prohibition prevails. By the same decision, the West Virginia law prohibiting the importation of intoxicants, for personal use, into the State, was upheld. This action on the part of the Supreme Court decided a contest which had gone on for years, over the right of Congress or of any State to prevent the importation of intoxicating liquors into prohibition territory. By this decision, prohibitionists are able to make anti-liquor laws completely effective. On January 9, the Senate passed the so-called Sheppard Bill providing for prohibition in the District of Columbia, by a vote of 55 to 32. An attempt was made to add an amendment to the bill which would have required a vote of the people of the District of Columbia before it became a law, but this amendment was defeated. The bill later passed the House and was signed by the president. On February 2, the new Oregon law, absolutely prohibiting the importation of liquor for drinking purposes, was approved by the governor. On the same day, a similar bill was signed by the Governor of Tennessee. The legislature of Arkansas adopted a prohibition law which prevents shipments of liquor into the State, and also prevents its shipment from one part of the State to another, and its storage in any part of the State. These laws are designed to take advantage of the decision of the Supreme Court referred to above, upholding the constitutionality of the Webb-Kenyon Law. A State wide prohibition bill which had already passed the lower house, passed the Indiana Senate on February 2, by a vote of 38 to 11. The bill then went back to the house for the consideration of amendments adopted in the Senate. The Utah legislature passed a measure providing for the appointment of a commissioner to see that the prohibition law was enforced. Governor Kendrick, of Wyoming, early in February, signed a bill submitting the constitutional amendment for the State prohibition to the voters of the State in 1918.

The New York legislature of 1917 passed several important measures relating to liquor traffic. Stringent regulations were enacted against the existence of saloons near military cantonments. The excise commissioner is given the power to suspend, during the war, liquor tax certificates, and to prohibit, or limit the sale of liquor in the neighborhood of troops, camps, or barracks, munition factories or places producing munition material. The excise rates for liquor selling were substantially increased. A city local option law was enacted which applied to all the cities of the State with the exception of New York. This measure constituted each city as local option territory, and provided on proper petition of voters for a referendum in New York City at a special election on the third Tuesday in April, on the question of local option territory. A failure to carry this in the affirmative bars a second referendum for five years. In other cities, on a petition of voters, a special election is to be held on the third Tuesday of April to decide where and how liquor should be sold. These elections are to be held not oftener than once in three years, with the exception of New York City.

By enactment of Congress, the manufacture of whisky and all liquors with the exception of beer and wine was prohibited (see CONGRESS). on November 1, as a result of the measure noted above, the selling of liquor ceased in the District of Columbia. On December 10, the United States Supreme Court upheld the Idaho prohibition law giving an opinion in which it was held that a citizen has no constitutional right to possess liquors for his personal use, if a State wishes to forbid it. It was held that the State "has power absolutely to prohibit the manufacture, gift, purchase, sale, or transportation of intoxicating liquors within its borders without violating the constitution. Further it clearly follows from our previous decisions upholding prohibition legislation, that the right to hold intoxicating liquors for personal use is not one of those fundamental privileges of a citizen of the United States, which no State may abridge."

On December 11, President Wilson issued a proclamation reducing the alcoholic content of beer, effective after January 21, 1918, to 2¾ per cent by weight. He also prohibited the use in the manufacture of malt liquors of more than 70 per cent of the average amount of foods, fruits, food materials, and feeds, used in such manufacture during the one year period, ending on that date. The House of Representatives on December 17, by a vote of 282 to 128 passed a resolution to be submitted to the States within seven years, an amendment to the Federal Constitution providing for national prohibition. A similar resolution was adopted by the Senate in the preceding August, but on December 18, the Senate concurred by a rising vote with the House resolution.

LIQUORS. **United States.** In the early part of the year 1917 the proposed amendment to the Constitution of the United States, prohibiting the manufacture and sale of intoxicating liquors failed to receive legislative approval. However it was reintroduced during the week of December 17 and was passed by both houses. Following the War Declaration a crusade was started for National Prohibition for the period of the war, with the result that no spirits for beverage use could be legally manufactured after September 8, 1917, and that no cereal, molasses, or other food of value for human consumption could be used in the production of even non-beverage alcohol. All persons buying in wholesale quantities (non-beverage alcohol) must obtain a permit from the Commissioner of Internal Revenue. Up to the end of 1917 the law had worked admirably. There was on hand a two-year stock of whiskey, with no more being produced, and the importation of beverage spirits prohibited. The price of beverage spirits increased 100 per cent. By the efforts of President Wilson the prohibition of beers and wines was prevented.

Congress voted (without a referendum) the District of Columbia *dry*, effective November 1, 1917. This law went into effect quietly and with very good results. Oregon, Tennessee, and Indiana were added to the *dry* States. Over 50 per cent of the States are now dry, although the majority of the people live in the *wet* States.

It was generally believed that beverage spirits never again would be legally manufactured. The distillers were disheartened with the constant fight and were taking this opportunity to sell their stocks at a profit, thus recouping to some extent the loss on the equipment. While some distilleries had been remodeled into manufacturing establishments for other products other plants were dismantled.

In the War Revenue Act of 1917 an additional tax (to the $1.10) of $2.10 was placed on each proof gallon of beverage spirits, and an additional $1.10 on each proof gallon of non-beverage spirits. The revenue tax was applied to all beverages whether withdrawn from bond or in wholesale or retail establishments, and was therefore called a *floor* tax. The additional tax on beer was $1.50 per barrel, on wines 4 cents, 10 cents, and 25 cents per gallon, depending on the percentage of alcohol contained; grape brandy for the fortification of sweet wine, 20 cents per gallon.

Next to an amendment to the Constitution, the so-called Reed Amendment to the Bankhead Bill, which went into effect July 1, 1917, struck probably the most effective blow against the liquor interests, as it prohibited the shipping of liquor into any State holding the manufacture of alcoholic beverages to be unlawful, and further prohibited sending into any such State, through the mails, any publication or printed matter containing liquor advertisements.

Canada. On May 1, 1918, the city of Quebec was to become dry by reason of a vote cast October 4, 1917. Adjacent areas however were not effected. By an Order in Council, after December 1, 1917, until abnormal conditions due to the war cease, no grain of any kind, and no substance that could be used for food was to be used in Canada for the distillation of potable liquors. Canada also prohibited the importation of any spirituous beverage and the manufacture of any intoxicating beverage exceeding 2½ per cent of alcohol.

Great Britain. In February the Food Controller reduced the amount of beer allowed to be brewed to 70 per cent of the output of the preceding year, and corresponding restrictions were placed on the release of wines and spirits from bond. In October a maximum price was fixed for draft beer depending on gravity.

Other European Countries. All countries directly affected by the war placed restrictions of some kind on the manufacture and sale of alcoholic beverages. It was noticeable however that many of the smaller countries not so affected were obtaining some of the business of the larger nations. Barbados for example produced twice as much rum in 1916 as in 1915, due to the large export demand to Great Britain. Drinking in Sweden became an expensive luxury; one had to buy a meal in order to obtain his drink, which proved an unfortunate requirement from the standpoint of food conservation. In Holland the retail price of beer was double that of 1913, and the production of gin was prohibited. This was a serious blow to Schiedam, made famous by its Schiedam Schnapps. There are located here five hundred distilleries producing gin, and the entire business of the place depends on the distilleries and their connections, such as cooperage, bottle making houses, etc.

Wines. The world's wine production for 1916 in hectolitres (26.4 gallons) was as follows:

Countries	*Hectolitres*	*Countries*	*Hectolitres*
Algeria	8,731,000	Italy	38,700,000
Argentina	4,500,000	Portugal	5,449,000
Australia	250,000	Russia	1,500,000
Austria	250,000	Spain	23,272,000
Brazil	800,000	Switzerland	434,000
Chile	2,300,000	Tunis	460,000
France and Corsica	36,069,000	United States	1,578,000

Reports from France for 1917 indicated the yield of wine to be far less than normal. In addition to troubles arising from the war, the vines had been seriously injured by disease. Active steps were taken by the government to increase the cider output as much as possible, in order to offset conditions caused by the scarcity of wine. The prices of wine were expected to go still higher.

From all reports Italy's vintage for 1917 would be a bumper one. The production was estimated to be 1,056,710,000 gallons. New railroad cars, built in America, were being hastily assembled to handle the tremendous crop of grapes. The poorer classes had been accustomed heretofore to drinking a "second" wine, made largely from grape pressings by ferment-ing with added sugar. This product will be scarce on account of the difficulty of obtaining sugar, and hence these classes will be forced to drink the purer wine now so plentiful.

In Algeria one-third of the vintage was requisitioned for military purposes; each wine producer must turn one-third of his grapes into good table wine for the army. The crop was less than in 1916, and prices therefore higher; to add to producers' troubles a decided shortage existed in barrels and bottles.

In California the vintage was supposed to be about normal, but the outlook was uncertain. The wine maker did not know definitely whether he would be allowed to make wine, or the grape grower whether he could sell his grapes to the winemaker. Many growers decided to dry their grapes rather than attempt to sell them to the winemakers. The demand for California wine has been good, particularly export; in one month of 1917 90 per cent more wine was exported than in the corresponding month of the previous year. The Eastern growers labored under the same difficulty as the Western. Many were going out of business, preferring to invest their capital in some business more stable than that of manufacturing intoxicating liquors.

FERMENTED LIQUORS. The following table shows the production of fermented liquors, per capita consumption, etc., in the United States for the two years 1916 and 1917:

Year	*Bbls. Beer*	*Per capita gallons*	*No. of breweries*	*Retail dealers*
1916	...58,633,624	17.59	1,318	12,716
1917	...60,817,379	....	1,247	11,151

The production shows a decided increase, notwithstanding the increase of prohibition, although it will be noted that the number of breweries and retail dealers has decreased.

The year 1917 found the brewing operations in Bohemia, Austria, very much reduced. While the hop yield was satisfactory for all reasonable demands, all the barley has been taken over by the government. In 1914, 532 breweries produced 228,000,000 gallons of beer; in 1916 but 504 breweries were in operation with a total production of but 79,000,000 gallons. It is estimated that since this report was made at least 200 more breweries have suspended operation. The price in 1914 was about one crown per United States gallon, in the fall of 1916 the price was about three and a half crowns per gallon. In Germany about the same conditions existed as in Austria, and in many towns the amount one might drink was limited. The extreme shortage in the supply of beer was a serious one for the military authorities, for the German soldier demanded his daily allowance of beer,—at least as much as he dared demand anything.

NON-ALCOHOLIC BEVERAGES. The manufacture of so-called non-alcoholic beverages, made to resemble beer but containing less than 0.5 per cent of alcohol, has steadily increased. It was said that over $300,000 more was spent in 1917 than in 1916 in advertising this class of beverages; and the effort to obtain business was not confined to dry States. At the end of 1917 no authentic data were available on the production of these beverages, but as an Internal Revenue tax of one cent per gallon had been placed on all carbonated beverages, some statistics would be available in the future. See FOOD CONTROL.

LITERATURE. See articles on French, German, Italian, Scandinavian and Spanish Literatures; also LITERATURE, ENGLISH AND AMERICAN.

LITERATURE, ENGLISH AND AMERICAN. The output of 1917 has given no uncertain answer to the question propounded in 1914 as to the effect of war upon literature. The tendency throughout the whole English-speaking world has been to increase the number of books, to weed out the trivial—except in the case of adventure and detective stories particularly in demand for relaxation—and to enlarge the consumption of non-fiction discussions of the war and the profounder problems of life which it has emphasized, and to augment markedly the interest in poetry. While but a small part of the printed matter of the year can hope for permanency, it has struck a high note of seriousness. And it is becoming increasingly evident that in the complexity and fluidity of modern life genuine contemporary importance must partly take the place of permanence in the standards used to measure literary excellence.

The table on the following page, reprinted by courtesy of the *Publisher's Weekly*, presents the situation effectively.

FICTION. (Here, and throughout this article, English and American literature is treated as the whole which it in reality is.) The average quality of the year's fiction has been good, but the contributions of marked significance have been few. Two posthumous and unfinished novels by Henry James were published in 1917: *The Ivory Tower*, an international story in his most involved style, and *The Sense of the Past*, an international story involving James Russell Lowell's residence in London. Henry James's own notes forecast the ending, and the whole story is phrased in his simplest and most penetrating English. Joseph Conrad published only a long short-story, *The Shadow Line*, in which the illimitable Unknown continues to dominate the lives of men. John Galsworthy did much less than his best in *Beyond*, a study of the tragedy of ill-considered and illicit love. Eden Phillpotts was less tragic than usual in *The Banks of Colne*, another study of British industry, and chose a delightful theme for his skill in *The Girl and the Faun*, an allegory of eternal youth and human frailty. Hugh Walpole did veracious work in *The Green Mirror*, a gentle satire on an English family and its daughter's love affair. The irrepressible H. G. Wells continued on his reconstruction of human society by readjusting religion in *The Soul of a Bishop*, wherein he creates no characters but does much talking denunciatory of creeds and religious authority, an application in semi-fiction form of Mr. Wells's previous conclusions in *God, The Invisible King*. An excellent piece of work is St. John Ervine's *Changing Winds*, a faithful and delightful study of somewhat callow young Englishmen called to manhood by the war. Ernest Poole more than justified expectation by his second novel, *His Family*, a study of changing and diversifying ideals realistically set against the background of modern New York, and representative of the best in American realism. More grim was Joseph Hergesheimer's

AMERICAN BOOK PRODUCTION, 1916-1917 *

Book Publication for the United States, 1916-1917	*1917*			*1916*			
	By American Authors	*Published in U. S. by Foreign Authors*	*Total*	*By American Authors*	*Published in U. S. by Foreign Authors*	*Total*	*Increase or Decrease*
Philosophy	262	33	295	250	16	266	+ 29
Religion and Theology	623	24	647	581	27	608	+ 39
Sociology and Economics	820	26	846	673	11	684	+ 162
Military and Naval Science	315	7	322	83	..	83	+ 239
History	511	67	578	516	32	548	+ 30
Education	262	2	264	304	..	304	— 40
Fine Arts and Music	181	11	192	285	5	290	— 98
General Literature, Essays	292	21	313	309	21	330	— 17
Poetry and Drama	514	90	604	633	77	710	— 106
Fiction	632	156	788	703	79	782	+ 6
Geography and Travel	159	1	160	289	5	294	— 134
Biography, Genealogy	329	29	358	352	14	366	— 14
All other books	3.207	162	5,367	3.452	80	5,267	+ 100
Total	8,107	629	8,736	8,430	317	8.797	— 61
Imported books	....	...	1,324	....	...	1,648	— 324
Grand total	....	...	10.060	....	...	10,445	— 385

* These figures include pamphlets of which 2051 were published in 1917; 1941 in 1916.

Three Black Pennys a powerful delineation of hereditary flaws outcropping through three generations. Mary Webb laid in Wales an effective tragedy of passion, *Gone to Earth*. Hugh de Sélincourt's *A Soldier of Life* was a brilliant war story of disintegration and subsequent regeneration. Maurice Hewlett's Icelandic story, *Thorgils*, was told with a convincing simplicity of style. J. D. Beresford effectively described the growth of sympathy in *Housemates* and satirized intellectual self-sufficiency in *The Wonder*. *Mendel* by Gilbert Cannan pictured a struggle for self-expression, and his *Stucco House* staged an industrial conflict. E. F. Benson's *Michael* was a tale of war, love, and divided friends, *The Tortoise* a tale of life dominated by the trivial, *The Freaks of Mayfair* a series of satires. *The Wave* by Algernon Blackwood staged another reincarnation, while J. C. Snaith's *The Coming* attempted to modernize the Carpenter of Galilee. Archibald Marshall in *Upsidonia* indulged in a *Utopia*, in *Abington Abbey* he followed the best traditions of Trollope. Elizabeth Pennell's *The Lovers* was a delicate picture of married lovers; Forrest Reid's *Spring Song* was the story of a sensitive child. Edith Wharton wrote a realistic but unpleasant New England story in *Summer;* while Winston Churchill's *Dwelling Place of Light* was distinctly unconvincing. Fryniwyd Tennyson Jesse staged a rather notable drama against the background of Cornwall in *Secret Bread;* Mrs. Humphry Ward tells a quiet story of war's readjustments in *Missing;* and Alfred T. Sheppard writes a story of weak souls in *The Quest of the Ledger Dunstan*.

Of importance also are: Katherine Fullerton Gerould's satire, *A Change of Air;* Mary Fisher's *The Treloars;* Hetty Hemenway's *Four Days;* Gertrude Hall's *Aurora the Magnificent;* Sheila Kaye-Smith's *The Challenge to Sirius;* Marie Adelaide Lowndes's *Lilla;* Stephen McKenna's *Sonia;* Alice Brown's *Bromley Neighborhood;* Phyllis Bottome's *The Second Fiddle;* William J. Locke's *The Red Planet;* and the anonymous *Helen of the Four Gates*, a story of malice that is in its handling somewhat reminiscent of Thomas Hardy. Alice Cholmondeley in *Christine*, a series of interesting letters, and Mrs. Alfred Sidgwick—too solemnly—in *Salt of the Earth*, attack German presumption and domestic tyranny. Realistic studies of youth and broken conventions—fewer than usual—are represented by Emerson Hough's *The Broken Gate;* Robert Hitchens's *In the Wilderness;* Basil King's *The Lifted Veil;* St. John Lucas's *April Folly;* Vincent O'Sullivan's *The Good Girl;* Grant Richards's *Bittersweet;* Perley Poore Sheehan's *Those Who Walk in Darkness;* and Francis Bellamy's *The Balance*. Abraham Cahan's *The Rise of David Levinsky*, E. G. Stern's *My Mother and I*, Sidney L. Nyburg's *The Chosen People*, and Edna Ferber's *Fanny Herself*, all deal with the problems of the Jew in America. Caradoc Evans writes of the Welsh peasant in *My People;* Paul Kester of the Negro in *His Own Country;* and Sholom Ash of the Russian in *Mottke The Vagabond*. Studies of marriage are: Edward Burke's *My Wife;* May Edginton's *Married Life;* the anonymous *Empty House;* Henry Kitchell Webster's *The Thoroughbred;* Rupert Hughes's *We Can't Have Everything;* Edith Barnard Delano's *To-Morrow Morning;* Frances Rumsey's *Mr. Cushing and Mlle. du Chastel;* Mrs. Victor Rickard's *The Frantic Boast;* and Sinclair Lewis's slight, but pleasant story, *The Innocents*.

Among the lighter romances of youth and love and stories noteworthy for humor, whimsy, and fantasy, F. T. Wawn contributed *The Joyful Years;* Margaret Widdemer the *Vivacious Wishing Ring Man;* Horace Annesley Vachell, *Fishpingle*, an English comedy; Allan Updegraft a first novel of promise, *Second Youth;* Alice Hegan Rice, *Calvary Alley;* Meredith Nicholson provided *The Madness of May* and *A Reversible Santa Claus*. Stuart Maclean writes delicate sentiment into *Alexis;* Julia H. Coffin tells a fable in *The Vendor of Dreams;* Christopher Morley contributes a romance, *Parnassus on Wheels;* Helen Martin introduces *Those Fitzenbergers;* and Joseph C. Lincoln engages in *Ex-*

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AMY LOWELL
American Poetess

RUTH McENERY STUART
Author
Died, May 6, 1917

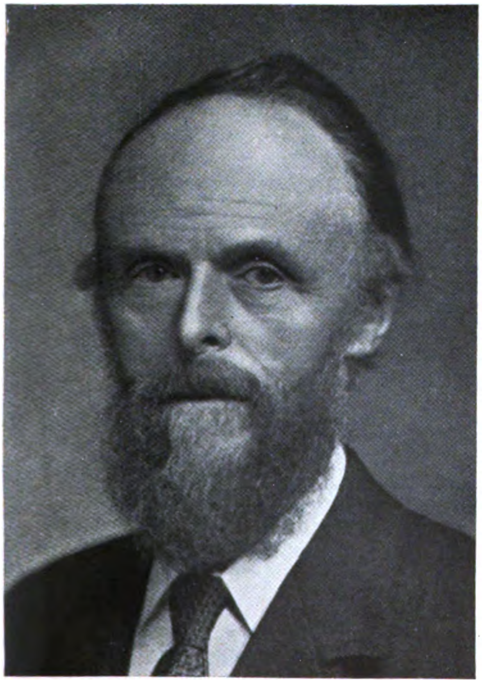


Photo by Elliott & Fry

WILLIAM F. DE MORGAN
Novelist
Died, Jan. 15, 1917

HAMLIN GARLAND
Novelist

FOUR LITERARY FIGURES PROMINENT IN 1917

tricating Obadiah. There are also W. W. Jacobs's *The Castaways;* W. E. B. Henderson's satiric romance, *Behind the Thicket;* John Fox's *In Happy Valley;* Temple Bailey's two light romances, *Mistress Anne* and *The Glory of Youth;* James Branch Cabell's delicate parable, *The Cream of the Jest.*

Other books worth mentioning are: Gertrude Capen Whitney's *The House of Landell;* Theodore Watts-Dunton's leisurely *Vesprie Towers;* Edith Wherry's study of Chinese character in *The Wanderer on a Thousand Hills;* George Stevenson's quietly humorous story of English country life in *A Little World Apart;* Countess Barcynska's *If Wishes Were Horses;* Louis Dodge's well articulated tragedy, *Children of the Desert;* Robert Cutler's *Louisburg Square,* a fine piece of sympathetic realism; E. Phillips Oppenheim's *The Hillman;* Stacy Aumonier's *Just Outside;* Mary E. Wilkins Freeman and Florence Morse Kingsley's disappointing *An Alabaster Box;* W. J. Dawson's quiet narrative, *Robert Shenstone;* Eugenia Brooks Frothingham's study of love in *Way of the Wind;* Basil King's *The High Heart;* Florence Morse Kingsley's *Neighbors;* Mrs. Frances Hodgson Burnett's *The White People;* Arthur Stanwood Pier's *Jerry;* Henry Handel Richardson's meandering *Fortunes of Richard Mahoney;* Gordon Hall Gerould's kindly *Peter Sanders, Retired;* Sir William Blake Richmond's satire of an elderly man upon the world's conventions in *The Silver Chain;* Boyd Cable's vigorous war story, *Grapes of Wrath;* and "Sapper" 's terrible realism in *No Man's Land.* Industrial conditions were responsible for Upton Sinclair's *King Coal;* for Sherwood Anderson's *Marching Men;* and for Mary Austin's *The Ford.* Feminism inspired that curious hybrid, *The Sturdy Oak,* a story of politics, kidnapping, and final conversion to suffrage, written in turn by fourteen American authors; and also Marjorie Benton Cooke's *Cinderella Jane;* Kathleen Norris's *Martie the Unconquered* and *Undertow;* Zona Gale's *A Daughter of the Morning;* Mary Johnston's *The Wanderers;* Clarence Dane's attack upon the abnormality resulting from segregation, in *The Regiment of Women;* Mary Hallock Foote's *Edith Bonham;* and Stella Benson's clever, if bitter, *This Is the End.*

The year saw published a number of stories of children and adolescent youth intended for more adult readers. Among the best of these were: Dorothy Canfield Fisher's *Understood Betsy;* Samuel Merwin's *Temperamental Henry;* E. M. Delafield's *Zella Sees Herself;* Eleanor Gates's *Apron Strings;* Holloway Horn's *The Folly of Innocence;* Mary Roberts Rinehart's *Bab—A Sub-deb;* John Hay Beith's (Ian Hay) *Pip;* Sophie Cole's *A London Posy;* Honoré Willsie's charming *Lydia of the Pines;* and Bettina Von Hutten's *Mag Pye.*

Stories of adventure, of mystery, and of the super-clever detective are legion, and the demand from the front still continues. Among the more noteworthy adventures are: Henry De Vere Stackpoole's delightful *Sea Plunder;* John Buchan's fine *Greenmantle,* as also his *Salute to Adventurers;* Sir Rider Haggard's third and last of the Quartermain adventures, *Finished;* Jessie Douglas Kerruish's *Miss Haroun al Raschid;* Jack London's posthumous *Jerry of the Islands* and *Michael, Brother of Jerry;* Talbot Mundy's *The Winds of the World;* Jackson Gregory's *Wolf Breed;* Arthur Machen's *The Terror;* Mary Roberts Rinehart's *Long Live the King;* and Robert Chambers's *Barbarians* and *The Dark Star.* Of mystery and detective stories one might select: Vernon Horace Rendell's *The London Nights of Belsize;* Arthur Sherburne Hardy's *No. 13 Rue du Bon Diable;* Anna Katherine Green's *The Mystery of the Hasty Arrow;* Mrs. Wilson Woodrow's *The Hornet's Nest;* Holman Day's *Where Your Treasure Is;* George F. Bronson-Howard's *Slaves of the Lamp;* Jeffery Farnol's whimsical *The Definite Object;* William MacHarg and Edwin Balmer's *The Indian Drum;* Carolyn Well's *Faulkner's Folly;* Jannette Lee's *The Green Jacket,* and a number of others.

As for historical novels, Irving Bacheller has written the story of a fine old political type from the 40's in *The Light in the Clearing;* and Will Harben goes back to Georgia and the Civil War in *Triumph. My Story* by Frederic J. Stimson is the life of Benedict Arnold cast in autobiographical form. The Baroness Emmuska Orczy in *A Sheaf of Bluebells* tells an excellent story of the Napoleonic era. Joseph McCabe's *The Pope's Favorite* describes the pomp and crime of the Borgias; Clara E. Laughlin's *The Heart of Her Highness* concerns the daughter of Charles the Bold of Flanders; Warwick Deeping places *Martin Valliant* in the time of Richard the Hunchback; and Charles Benjamin Hudson retells effectively the story of David and Saul in *A Royal Outlaw.* Worthy of mention also are: Cyrus Townsend Brady's *When the Sun Stood Still;* J. Harold Carpenter's *The Pendulum;* Florence L. Barclay's *The White Ladies of Worcester;* E. Brandram Jones's *The Second Cecil;* Cecil Starr Johns' *With Gold and Steel;* Marjorie Bowen's *William By The Grace of God* and *The Third Estate;* Agnes and Egerton Castle's *Wolf Lure;* Gabrielle Festing's *Honour Among Thieves;* George Gough's *The Yeoman Adventurer;* and Rafael Sabatini's *The Snare.*

SHORT STORIES. The year boasts its full quota of volumes of short stories, among the best being: Rudyard Kipling's *A Diversity of Creatures,* stories which bear witness to a sure hand and a maturer mind, though they miss some of the old fervor and imagination; Sir Arthur Conan Doyle's rejuvenescence of Sherlock Holmes in *His Last Bow;* Thomas Burke's vivid but sordid *Limehouse Nights;* Richard Harding Davis's effective human document, *The Deserter;* Henry De Vere Stackpoole's dashing narratives, *In Blue Waters;* A. E. W. Mason's *The Four Corners of the World;* J. B. Connolly's sea tales, *Running Free;* Algernon Blackwood's stories of the subliminal and the exotic, *Day and Night Stories;* Phyllis Bottome's *The Derelict;* Daniel Corkery's realistic *Munster Twilight;* Rupert Hughes's *In a Little Town;* and Samuel Hopkins Adams's *Our Square and The People In It.* Jack London's *The Human Drift* includes also sketches, essays, and a curtain raiser. There are also Rex Beach's *Laughing Bill Hyde;* Katherine H. Brown's *The Wages of Honor;* Wallace Irvin's *Pilgrims Into Folly;* Irvin Cobb's *Those Times and These.* The war appears in Alden Brooks's *The Fighting Men;* in David H. Laurence's grim *Prussian Officer;* and in Harold Ashton's *The Tale of a Tank.* Edward J. H. O'Brien's anthology, *The Best Short Stories of 1916,* included contributions selected from sixty-nine magazines; and Frederick Stuart Greene in *The Grim Thirteen* collected from various authors stories refused magazine publication ostensibly for their grimness.

POETRY. The most notable volumes of poetic criticism for the year are: Amy Lowell's interpretation of the imagists and the objective school, *Tendencies in Modern American Verse;* and Sir Henry Newbolt's *A New Study of English Poetry* in which he undertakes a comprehensive discussion of the qualities and purpose of verse. H. Houston Peckham also contributes *Present Day American Poetry,* a collection of essays. *The New Poetry,* an anthology edited by Harriet Munroe and Alice Corbin Henderson, includes excellently selected examples of the verse of nearly a hundred poets. The small special collection, *Some Imagist Poets: 1917,* appears for the last time this year. William Stanley Braithwaite publishes his annual, *Anthology of Magazine Verse for 1917,* and also his discursive *The Poetic Year for 1916.*

Among the outstanding books of verse for the year are: Sara Teasdale's exquisite lyrics, *Love Songs;* Ralph Dodgson's *Poems,* which for simplicity and mysticism rival Blake, and his *The Last Blackbird,* which out-Blake's Blake; Wilfred Wilson Gibson's *Livelihood, Dramatic Reveries,* and his *Collected Poems,* significant for dramatic sense and sympathetic insight: James Elroy Flecker's posthumous *Collected Poems,* notable for rich music and delicate workmanship; William Henry Davies's *Collected Poems,* reminiscent often of the Caroline lyrics; Edward Arlington Robinson's *Merlin;* Charles Algernon Swinburne's *Posthumous Poems;* Arthur Symon's fastidious verse in *Poems,* in *Tragedies,* and in *Knave of Hearts;* Sir William Watson's *The Man Who Saw,* and *Retrogression and Other Poems;* George E. Woodberry's *Ideal Passion;* Richard Burton's *Poems of Earth's Meaning;* Thomas Hardy's *Moments of Vision.* There were also: Winifred W. Letts's *Hallowe'en and Poems of the War,* re-issued with a few additions as *The Spires of Oxford,* so called from the exquisite title poem; John Masefield's *Lollington Downs,* less good than his best; a definitive edition of Charles W. Stoddard's *Poems;* Eden Phillpotts's *Plain Song;* Vachel Lindsey's *The Chinese Nightingale;* Edgar Lee Masters's *The Great Valley;* Sarah N. Cleghorn's restrained *Portraits and Protests;* and Robert Nichols's *Ardours and Endurances,* poems of imagination and feeling.

Worthy of mention also, out of the upwards of a thousand volumes published in England and America for the year, were Launcelot A. Cranmer-Byng's translations from the Chinese, *A Feast of Lanterns;* Theodosia Garrison's *Dreamers;* Richard Butler Glaenzer's *Beggar and King;* Christopher Morley's *Songs for a Little House;* Francis Ledwidge's *Songs of Peace;* Alice Meynell's *A Father of Women;* Ezra Pound's perverse *Lustra;* R. E. Vernède's *War Poems and Other Verses;* Alice Brown's *The Road to Castaly;* Bruce Malaher's *The Wizard's Loom;* Louis Untermeyer's *These Times;* Cale Young Rice's *Trails Sunward;* Arthur Davison Ficke's *An April Elegy;* James Oppenheim's *Book of Self;* Edith Wyatt's *The Wind in the Corn.* There were also: *Grenstone Poems* by Witter Bynner; *Swords for Life* by Irene Rutherford McLeod; *The Vision Splendid* by John Oxenham; *Stars and Fishes* by George Rostrevor; *The Bubble and Other Poems* by Willoughby Weaving; *The Jig of Forslin* by Conrad Aiken; *The Volunteer and Other Poems* by Herbert Asquith; *The Shadowed Hour* by John Erskine; *The City of Fear* by Gilbert Frankau; *London Lamps* by Thomas Burke; and *The Red Flower* by Henry Van Dyke.

Homely and humorous verse was represented by: William Aspenwall Bradley's *Old Christmas and Other Kentucky Tales in Verse;* Edgar A. Guest's *Just Folks;* Orrick G. Johns's *Asphalt and Other Poems;* Joyce Kilmer's *Main Street;* Franklin P. Adams's amusing *Weights and Measures;* John Collins Squire's clever parodies, *Tricks of the Trade;* Alice Duer Miller's gay suffrage arguments in *Women Are People;* beside John Hay's *Complete Poetical Works.*

Anthologies were many in 1917. Among those dealing with war were: *A Treasury of War Poetry* edited with excellent judgment by George Herbert Clarke; *Fifes and Drums,* American war verse; *A Book of Verse of the Great War,* edited by W. R. Wheeler; *The Muse in Arms,* edited by E. B. Osborn; *Rookie Rhymes,* by men of the first and second Plattsburg camps; and *Canadian Poets and Poetry,* edited by John W. Garvin. Among other anthologies were: *The Answering Voice,* one hundred love lyrics by women, chosen by Sara Teasdale; *A Book of Yale Review Verse;* an English *Anthology of New Poetry for 1917; The Oxford Book of English Mystical Verse; Camp Fire Verse; The Poets of the Future—A College Anthology for 1916-17; Some Minor Poems of the Middle Ages;* and the fifth volume of Ward's *The English Poets,* extending from Browning to Dowson.

DRAMA. The year 1917 saw the publication of a number of discussions of the contemporary drama and not a few collections of plays—for the most part in one act—representing both phases of the new movement—realistic studies of life on the one side and expressions of highly poetic imagination on the other. Discussion was represented by Thomas H. Dickenson's illuminating *Contemporary Drama in England* and by the same author's sane study of *The Insurgent Theatre;* by Ernest A. Boyd's careful *Contemporary Drama of Ireland;* by Louise Burleigh's *The Community Theatre in Theory and Practice;* by Sheldon Cheney's *The Art Theatre;* by John Talbot Smith's *The Parish Theatre;* by Percy W. Mackaye's *Community Drama,* and Constance D'Arcy Mackay's *Little Theatre in the United States;* by Aleksander Bakshy's *Path of the Modern Russian Stage;* and by William H. Scheifley's *Brieux and Contemporary French Society.* Edward Hale Bierstadt contributes a book on *Dunsany the Dramatist;* Clayton M. Hamilton, a combination of discussion and dramatic criticism in *Problems of the Playwright;* Joseph F. Daly publishes a valuable biography of his brother, *The Life of Augustin Daly;* Alexander Woollcott has gathered together much interesting opinion and reminiscences in *Mrs. Fiske; Her Views on Actors, Acting, and the Problems of Production.* Arthur H. Quinn edited an admirable collection of *Representative American Plays;* and Montrose J. Moses published the first of a three volume *Representative Plays by American Dramatists.*

By all odds the most notable volumes of plays for the year were Lord Dunsany's *Plays of Gods and Men,* exquisitely phrased, yet tensely dramatic; and Arthur Symons's *Tristan and Iseult,* a four act play in verse that is rich with enchantment and weighted with the sense of doom. George Fitzmaurice carried on the Irish traditions in *Five Plays;* Stuart Walker contributed four fanciful *Portmanteau Plays;* Jeannette Augustus Marks showed both humor and pathos in *Three Welsh Plays;* Frank Betts produced three tense *Saga Plays;* Percival Wilde wrote *The Unseen Host and Other War Plays;* and Percy W. Mackaye published his fantasy, *Sinbad the Sailor,* and the operatic version of his comedy, *The Canterbury Pilgrims.* Padraic Colum caught the color of oriental imagination in his *Mogu, The Wanderer.* Granville Barker published *Three Short Plays;* Eden Phillpotts, *A Farmer's Wife;* Rabindranath Tagore, *Sacrifice and Other Plays;* and the Drama League Series contributed a volume of four *Washington Square Plays.* There were also: Philip Moeller's biographical comedy, *Madame Sand;* Edward Massey's burlesque, *Plots and Playwrights;* Frederic Ridgely Torrence's *Granny Maumee,* three plays for a Negro theatre; *Six Plays of the Yiddish Theatre;* Charles Rann Kennedy's chaotic *The Ribs of the Man;* and a number of volumes of short plays. Of unusual interest is the publication of *Noh; or, Accomplishment, a Study of the Classical Stage of Japan,* by the late Ernest F. Fenollosa and Ezra Pound, including fifteen examples of the Noh, or class plays, and an essay upon their origin and development by Dr. Fenollosa.

LITERARY CRITICISM, BIOGRAPHY, ESSAYS, AND GENERAL LITERATURE. Literary History was represented in 1917 by volumes 13 and 14—the last—of the *Cambridge History of English Literature,* which concerned themselves particularly with Carlyle, Tennyson, the Brownings, Dickens, Thackeray, and with articles on various special interests, including journalism and colonial literature, and by volume 1 of the *Cambridge History of American Literature,* edited by W. P. Trent, John Erskine, Stuart P. Sherman, and Carl Van Doren, which treats of Colonial, Revolutionary, and early national literature. Shakespearean literature was augmented by *Shakespeare's England—An Account of the Life and Manners of His Age,* in two important volumes which represent the collaboration of a number of scholars; by Joseph Quincy Adams's careful study *Shakespearean Playhouses;* and by Peter Hampson Ditchfield's *The England of Shakespeare.* Charles Mills Gayley writes on *Shakespeare and the Founders of Liberty in America;* Sir Arthur Quiller-Couch contributes *Notes on Shakespeare's Workmanship,* in which he approaches W. S. as a popular playwright; and Dr. Nichol Smith publishes an anthology of *Shakespeare Criticism,* from Ben Jonson down. J. A. R. Marriott writes on *Shakespeare and the Spirit of England;* and John Mackinnon Robertson, in *Shakespeare and Chapman,* argues for Chapman's authorship of *A Lover's Complaint.* J. E. Spingarn, in *Creative Criticism,* advocates a criticism that shall strive to evaluate the artist's effectiveness in his expression of emotion and life, in place of the formal criticism that concerns itself with technical details. William C. Brownell, in *Standards,* apppeals against wilfull eccentricities in art. Arthur Symons, in *Figures of Several Centuries,* has written finely critical essays on many subjects from St. Augustine down; Stuart P. Sherman, in *On Contemporary Literature,* contributes wholesome essays in criticism; Waldo Hilary Dunn, in *English Biography,* makes a scholarly survey of the field; and Lafcadio Hearn's *Life and Literature,* just published from notes taken by his Japanese students, offers much penetrating criticism by one who was himself a master of style. Three more volumes from the "How to Know Him" series reach a high grade of excellence: William Allan Neilson's excellent interpretation of *Robert Burns;* Stuart P. Sherman's interesting *Matthew Arnold;* and Raymond M. Alden's *Alfred Tennyson.* George Saintsbury, the indefatigable, publishes volume 1 of *A History of the French Novel,* which extends to 1800; Vida D. Scudder has completed a careful survey of *The Morte D'Arthur of Sir Thomas Malory, and Its Sources;* Lizette Andrews Fisher makes a study of *The Mystic Vision in the Grail Legend and in the Divine Comedy;* W. Wagner adds *Epics and Romances of the Middle Ages;* and William Hawley Davis *English Essayists.* Lloyd R. Morris discusses the dramatic, political, and social renaissance in Ireland in *The Celtic Dawn;* Dorothy Scarborough writes a delightful book on *The Supernatural in Modern English Fiction;* James Vernon Ledoux makes an appreciative study of the poetry of *George Edward Woodberry;* Sheila Kaye-Smith writes, for the Writers of the Day Series, a little book on *John Galsworthy,* and Stephen Gwynn, for the same series, a *Mrs. Humphry Ward;* G. Turquet-Milnes discusses *Some Modern Belgian Writers;* Butler Wood edits *Charlotte Brontë—A Centenary Memorial,* which includes a number of articles; G. Currie Martin traces the dominant spirit in English poetry in *Poets of the Democracy;* and Alfred Lester Coester contributes a comprehensive and accurate *Literary History of Spanish America.* *The Moderns* by John Freeman includes keen critical estimates of Shaw, Wells, Hardy, Henry James, Conrad, Bridges, and others. *Six Major Prophets* by E. E. Slosson deals suggestively with Shaw, Chesterton, Wells, John Dewey, Rudolph Eucken, and F. C. S. Schiller. Nadine Jarintzov in *Russian Poets and Poems* includes a general discussion of Russian poetry and biographical and critical treatment of the older poets. Edward Moore writes *Studies in Dante;* Charles Hall Grandgent *The Ladies of Dante's Lyrics;* and Ezra Pound publishes a considerable body of criticism and social theory in *Passages from the Letters of John Butler Yeats,* being letters written to his son, W. B. Yeats. Leslie Hall follows Professor Lounsbury's lead in his discussions of *English Usage.* Elizabeth Deering Hanscom in *The Heart of the Puritan* has put together extracts from letters and journals which make a most illuminating contribution to the history of literature and of Puritanism.

BIOGRAPHY. Many valuable biographies and autobiographies appeared in 1917. Viscount John Morley published *Recollections,* which for richness of material and grace of style ranks first among the year's contributions. Hamlin Garland's *A Son of the Middle Border* for vividness of detail is unmistakably the best of its kind in America for the year. Two more notable volumes were Henry James's *Middle Years,* and Brander Matthews's *These Many Years.* Other autobiographical books were: William Henry Davies's *The Autobiography of a Super-Tramp;* Sir George John Younghusband's *A Soldier's Memories in Peace and War;* Mrs. Katharine Hinkson's *The Middle Years;* Alice

Stone Blackwell's book of the reminiscences of Madame Breshkovskaya, *The Little Grandmother of the Russian Revolution;* Cardinal James Gibbons's *A Retrospect of Fifty Years;* Sir Rabindranath Tagore's *My Reminiscences;* M. E. Ravage's *An American in the Making;* and Katherine Keith's *A Girl,* an unusual autobiographical study. Of particular interest is the long undiscovered *Reminiscences of a Literary Life* written by Charles MacFarlane, author and traveler, who died in 1858, but who knew in the flesh Keats, Shelley, Hartley Coleridge, and De Quincey.

The year has produced a definitive *Life of Keats* by Sir Sidney Colvin; *Shelley in England: New Facts and Letters from the Shelley-Whitton Papers* by Roger Ingpen; *Letters About Shelley: Interchanged by Three Friends,* Edward Dowden, Richard Garnett, and William Michael Rossetti; *The Life of Algernon Charles Swinburne,* an appreciation rather than a criticism, by Edmund Gosse; *Algernon Charles Swinburne,* a collection of personal letters and recollections, by his cousin Mrs. Disney Leith; *Letters and Recollections of Algernon Charles Swinburne* by Thomas Hake and A. Compton Rickett; *Sylvander and Clarinda: The Love Letters of Robert Burns and Agnes M'Lehose,* edited by Amelia J. Barr; *The Early Life of Robert Southey* by William Haller; and *François Villon: His Life and Times* by Henry De Vere Stackpoole. Albert Bigelow Paine edits a characteristically delightful collection of *Mark Twain's Letters,* covering the period from his eighteenth year to his death; F. B. Sanborn contributes *The Life of Henry Thoreau;* Edward Waldo Emerson, *Henry Thoreau, as Remembered by a Young Friend;* and there is the *Life and Letters* of Christopher Pearse Cranch, with memories of Brook Farm, Emerson, Lowell, Curtis, the Brownings, and the Storys. The year boasts also *The Life and Letters of Edward Everett Hale,* edited by his son; *The Life and Letters of Robert Collyer,* by John Haynes Holmes; the *Letters of John Holmes to James Russell Lowell and Others;* the *Correspondence of John Henry Newman with Keble and Others; The Life and Letters of the Rev. Stopford A. Brooke,* by L. P. Jacks; the *Life and Letters of Maggie Benson* by Arthur C. Benson; and *Selections from the Correspondence of the First Lord Acton;* two excellent biographies are *Herbert Spencer* by Hugh Elliot, and *The Life of John Fiske* by John Spencer Clark. Theon G. Strong has done valuable work in his *Joseph H. Choate;* Stephen Gwynn and Gertrude M. Tuckwell have made an important contribution to English political history in their *Life of the Rt. Hon. Sir Charles W. Dilke, Bart.;* and George Earle Buckle completes the fifth and last volume of *The Life of Benjamin Disraeli.* Gilbert A. Tracy publishes the *Uncollected Letters of Abraham Lincoln;* Alonzo Rothschild covers Lincoln's life until his election to Congress in his admirable *Honest Abe.* There are also lives of Penn, Franklin, General Grant, Stonewall Jackson, Lord Kitchener, Lloyd George, President Wilson, Lord Lister, Henry Ford, James J. Hill, Leonard Wood, Martin Luther, Hugo Grotius, Count Tolstoi, Bishop Wilberforce, Li Hung-Chang, Col. Mosby, Alan Seeger, Richard Strauss, and others. Calvin Thomas has done work of permanent value in his *Goethe;* Francis Hobart Herrick has written a scholarly *Audubon, The Naturalist;* Margaret Pease has contributed a valuable book in *Jean Jaurès, Socialist and Humanitarian;* and Winifred Stephens has drawn a very human picture of *Madame Adam.* Charles Belmont Davis has published *The Adventures and Letters of Richard Harding Davis;* and Coulson Kernahan, in *In Good Company,* has produced some interpretive biographical sketches of Watts-Dunton, Swinburne, Oscar Wilde, Lord Roberts, and others.

Essays. The year's output of Essays is best represented by: Arnold Bennett's *Books and Persons,* a collection of periodical criticism; E. V. Lucas's clever *A Boswell of Baghdad and Other Essays;* Michael Monahan's *New Adventures;* David Grayson's *Great Possessions;* Margaret Sherwood's *Familiar Ways;* Edith Wyatt's *Great Companions,* being essays in literary criticism; Augustine Birrell's *Self-Selected Essays,* largely biographical; Austin Dobson's *A Bookman's Budget;* G. K. Chesterton's *Utopia of Usurers,* wherein he takes an angry fling at wealth, and his somewhat startling *Short History of England;* Logan Pearsall Smith's *Trivia;* Hilaire Belloc's *The Present Position and Power of the Press;* Arthur Grant's *On the Wings of the Morning;* Dixon Scott's often penetrating criticism in *Men of Letters;* and Mark Twain's *What Is Man and Other Essays.* Distinctly worthy of mention also are: *Random Reflections of a Grandmother* by Esther Mary Sturgis; *Days of Discovery* by Bertram Smith; *A Naturalist of Souls* by Gamaliel Bradford; Stephen Paget's *I Sometimes Think;* Stephen Leacock's *Frenzied Fiction;* James G. Huneker's *Unicorns; The Birds of Shakespeare* by Sir Archibald Geike; *An Apology for Old Maids* by Henry Dwight Sedgwick; *Days Out and Other Papers* by Elizabeth Woodbridge; *The Inn of Disenchantment* by Lisa Ysaye Tarlean; *The Young Idea,* a collection of essays upon tendencies in American literature; *The Foes of Our Own Household* by Theodore Roosevelt; and *A Book of Prefaces* by Henry Louis Mencken. *The War and the Spirit of Youth* contains three most suggestive essays by a Frenchman, an Englishman, and an American.

The feminist movement is represented, among other books, by Gertrude Atherton's discussion of woman's work in war times in *The Living Present;* Wilma Meikle's *Towards a Sane Feminism;* Agnes Edith Metcalfe's *Woman's Effort,* a chronicle of British women's fifty years' struggle for citizenship; Dorothy Canfield and Sarah N. Cleghorn's *Fellow Captains,* which sets forth the achievements of five representative American women; and Francis Henry Gribble's *Women in Revolt,* historical sketches of famous women. The composite suffrage novel, *The Sturdy Oak,* is mentioned elsewhere.

Education. Several essays in the field of education call for notice. The war has necessitated a revaluation of many theories. Among the discussions are: John Burnet's *Higher Education and the War;* Paul Shorey's *The Assault on Humanism;* J. H. Badley's *Education after the War;* Kenneth Richmond's *The Permanent Values in Education;* Randolph S. Bourne's *Education and Living;* Francis Bail Pearson's *Reveries of a Schoolmaster;* H. H. Horne's *The Teacher as Artist;* Frederick P. Keppel's *The Undergraduate and His College;* and William T. Foster's pungent inquiry, *Should Students Study?*

FINE ARTS. The literature of Fine Arts for the year is best represented by Bernard Berenson's three books: *Essays on Sienese Painting*, *Venetian Painting in America*, and *The Study and Criticism of Italian Art;* by Ralph Adams Cram's *The Substance of Gothic;* by Kenyon Cox's *Concerning Painting;* and by Arthur Kingsley Porter's *Lombard Architecture*. Arthur Byne and Mildred Stapley wrote on *Spanish Architecture of the 16th Century;* Ralph Adams Cram, Thomas Hastings, and Claude Bragdon contribute *Six Lectures on Architecture;* James Ward completes volume II of *The History and Methods of Ancient and Modern Painting* (Cimabue to Pollaiuoli); W. A. Bradley, *French Etchers of the Second Empire;* and Katharine Metcalf Roof, *The Life and Art of William Merritt Chase*. John Thomas Smith writes a gossipy *Nollekens and His Times*, and Thomas Whitney Surette discusses the relation of *Music and Life*.

The realistic movement goes on in philosophy, but the war is responsible for certain breaths of the idealistic spirit. Notable among the year's contributions are: Bernard Bosanquet's *Social and International Ideals;* William Durant's *Philosophy and the Social Problem;* John Neville Figgis's *The Will to Freedom;* J. S. Mackenzie's *Elements of Constructive Philosophy;* Peter Coffey's *Epistomology;* De Witt H. Parker's *Self and Nature;* and particularly significant *Creative Intelligence*, essays by John Dewey, A. W. Moore, H. C. Brown, James H. Tufts, and others. Interesting also are: Sir B. Fuller's *Man as He Is;* Rabindranath Tagore's *Personality;* John Laird's *Problems of the Self;* E. F. B. Fell's *Personal Liberty;* William Tudor Jones's *The Spiritual Ascent of Man;* Frederick Spencer's *Human Ideals;* May Sinclair's *A Defense of Idealism;* and Rhys Carpenter's *The Ethics of Euripides*. Waldo E. Forbes contributes *Cycles of Personal Belief;* Bothwell Graham, *The Philosophy of Christianity;* George A. Barrow, *The Validity of the Religious Experience;* Boris Sidis, *Philistine and Genius;* and Carl Henry Grabo, *The Amateur Philosopher*.

RELIGION. Religious problems and theory have claimed their share of attention for the year, with much concern for the reshaping of old forms to meet new situations. The most scholarly book of the year in the field is A. Seth Pringle-Patterson's Gifford Lectures for 1912-13, *The Idea of God—In the Light of Recent Philosophy*. Dean George Hodges discusses *Religion in a World at War;* John Neville Figgis very seriously takes up *Some Defects in English Religion*. Harry E. Fosdick writes stimulatingly in *The Challenge of the Present Crisis;* R. J. Campbell in *A Spiritual Pilgrimage* confesses the failures of non-conformity in the crisis; William A. Brown adds *Is Christianity Practicable?* and John Haynes Holmes in his *Religion for To-day* argues for a religion of ethical rather than theological values. The vital problem of religious education is constructively discussed by George A. Coe in *A Social Theory of Religious Education;* by Francis Greenwood Peabody in *The Religious Education of an American Citizen;* and by Wallis S. Athearn in *Religious Education and American Democracy*. Walter Rauschenbusch expounds *A Theology for the Social Gospel*. *The Church and the Man* is a little collection of essays of a very wholesome sort by Donald Hankey. William Temple in *Mens Creatrix* shows religious experience confirmed by philosophy. Meanwhile the all-daring Mr. H. G. Wells sets out not only to reform the institutions of the church but also to re-discover and to re-state God in *God, The Invisible King*, which William Archer cleverly attacks in *God and Mr. Wells*.

The publication of the ninth volume of Hastings's *Encyclopædia of Religion and Ethics* is a scholarly achievement. The study of comparative religions received a few notable additions: George Barton's well-balanced *Religions of the World;* J. A. Montgomery's *Religions of the Past and Present;* Alexander Macbain's *Celtic Mythology and Religion;* Lewis Spence's *Myths and Legends of Babylonia and Assyria;* Rendel Harris's *The Ascent of Olympus*, a study of the origins of the cults of Dionysus, Apollo, Artemis, and Aphrodite; and Walter J. Channell's excellent *The Historical Development of Religion in China*. There were also *Origin and Growth of the Hebrew Religion* by Henry T. Fowler; and Albert M. Hyamson's *Palestine—The Rebirth of an Ancient People*, a study of Zionism. George A. Coe examines the natural basis of religion in *The Psychology of Religion;* G. Stanley Hall contributes *Jesus, the Christ, in the Light of Psychology;* Charles Foster Kent makes an extremely timely plea for brotherhood in *The Social Teachings of the Prophets and Jesus*. Paul Elmer Moore is responsible for a very thoughtful essay on the origins of Christianity which he entitles *Platonism;* Charles F. Nolloth writes *The Rise of the Christian Religion: A Study in Origins*. Other books are *The Bible's Prose Epic of Eve and Her Sons* by Eric S. Robertson; *The Golden Days of the Early English Church*, from the arrival of Theodore to the death of Bede, in three volumes, by Sir Henry Hoyle Howorth; and *The Religious History of New England* by John Winthrop Platner and others.

HISTORY. In the field of History, outside of books immediately concerned with the war, the most important contributions of the year have been: Charles Downer Hazen's authoritative and illuminating *Alsace-Lorraine Under German Rule;* six essays on *Russian Realities and Problems* edited by James Duff Duff; Robert W. Seton-Watson's *The Rise of Nationality in the Balkans;* Lord Eversley's *The Turkish Empire: Its Growth and Decay;* J. A. R. Marriott's *The Eastern Question;* Herbert Adams Gibbons's *The Reconstruction of Poland and the Near East;* Leon Dominian's *The Frontiers of Language and Nationality in Europe;* Kenneth Scott Latourette's *The Development of China;* B. L. Putnam Weale's *The Fight for the Republic of China;* and John Bassett Moore's *Principles of American Diplomacy*. Of value also are: *The Origins of the Triple Alliance* by Archibald C. Coolidge; *Modern European History* by Charles Downer Hazen; Ramsey Muir's *The Expansion of Europe, the Culmination of Modern History;* Lynn Thorndike's *The History of Mediæval Europe;* Harold W. V. Temperley's *History of Serbia;* T. Lothrop Stoddard's *Present Day Europe;* Hugh George Rawlinson's *Intercourse between India and the Western World from the Earliest Times to the Fall of Rome;* and the *History of the Belgian People*, volumes I and III, by Charles F. Horne and Augustus R. Keller. Poland receives attention in *The Political History of Poland* by E. H. Lewinski-Corwin; *A Short History of Poland* by Julia Swift Orvis; *A History of Poland from the Earliest Times to the Present Day* by F. E. Whitton; and *Poland Past and Present* by J. H. Harley. Richard Bagwell publishes the third volume of *Ireland Under the Stuarts;* Lord Ernest William Hamilton contributes *The Soul of Ulster;* and Ernest Barker *Ireland in the Last Fifty Years.* K. K. Kawakami writes *Japan in World Politics;* A. M. Pooley, *Japan at the Cross Roads;* Arnold Wright describes some *Early English Adventures in the East;* and the Panama-Pacific Historical Congress, 1915, publishes its papers under the title *The Pacific Ocean in History.* English history, domestic and foreign, comes under discussion in Arthur J. Klein's *Intolerance in the Reign of Elizabeth;* Gilbert Stone's *England from the Earliest Times to the Great Charter;* David D. Wallace's *The Government of England;* Julian Stafford Corbett's *England in the Mediterranean;* Hugh R. Egerton's *British Foreign Policy in Europe;* C. Brunsdon Fletcher's *The New Pacific; British Policy and German Gains; The Beginning of English Overseas Enterprise* by Sir Charles P. Lucas; and *A Century of British Foreign Policy* by George P. Gooch and John H. B. Masterman.

The United States and her policies are treated in: *Latin America and the United States,* a collection of addresses by Elihu Root; *American World Politics* by Walter E. Weyl; *Inter-American Acquaintances* by Charles L. Chandler; *Dramatic Moments in American Diplomacy* by Ralph W. Page; *The Mississippi Valley in British Politics* by Clarence W. Alvord; Volume IV of *A History of the United States,* which devotes itself to Federalists and Republicans, by Edward Channing; *The Danish West Indies Under Company Rule* by Waldemar C. Westergaard; *Paul Jones: His Exploits in English Seas* by Don C. Seitz; Mrs. Nelson O'Shaughnessy's *Diplomatic Days;* and John S. Bassett's careful study of *The Middle Group of American Historians,* which includes Motley, Prescott, and Bancroft.

Problems belonging rather to the field of political science are discussed in: *The English-Speaking Peoples: Their Future Relationships and Joint International Obligations* by George Louis Beer; *A League of Nations* by Henry Noel Brailsford; *Democracy After the War* by J. A. Hobson; *International Realities* by Philip Marshall Brown; *Political Frontiers and Boundary Making* by Sir Thomas Hungerford Haldich; *The Choice Before Us* by G. Lowes Dickinson; *Our Democracy: Its Origins and Its Tasks* by James H. Tufts; Ramsey Muir's *Nationalism and Internationalism;* Rabindranath Tagore's essay upon *Nationalism;* Israel Zangwill's *The Principles of Nationalities;* W. H. Mallock's *The Limits of Pure Democracy;* Thorstein B. Veblen's *An Inquiry Into the Nature of Peace and the Terms of Its Perpetuation;* Bertrand A. W. Russell's stimulating *Political Ideals* and his *Why Men Fight.* To a series of discussion of the philosophy and political reconstruction after the war Gilbert Cannan contributes *Freedom,* G. D. H. Cole, *The State and Industry,* and A. Maude Royden, *The State and Woman.* William Harbutt Dawson edits a volume of *After War Problems.* George William Russell ("A. E.") writes *National Being: Some Thoughts on an Irish Polity,* and Theodore Roosevelt publishes a volume entitled *National Strength and International Duty.*

Of books on the war, whether personal narratives or historical descriptions, there have been hundreds. In fact three-quarters of the non-fiction publications of the year deal in some way with the war. It is impossible to do more than name a very few, which make some pretension to literary excellence or historical importance. John Buchan publishes volumes 15, 16, and 17 of *Nelson's History of the War,* including the period from Brussilov's offensive to the change of government in Great Britain; Sir Arthur Conan Doyle the second volume of *A History of the Great War,* including the British Campaign in France and Flanders in 1915; Stanley Washburn, *The Russian Offensive,* the third volume of field notes from the Russian front, covering the period from June 5 to September 1, 1916. *The Soul of the Russian Revolution* is authoritatively described by Moissaye J. Olgin, student, editor, and political convict; I. F. Marcosson discusses *The Rebirth of Russia;* and Isaac Don Levine, *The Russian Revolution.* Hugh B. C. Pollard tells vividly the tragic *Story of Ypres;* John Buchan does the same for the first phase of *The Battle of the Somme;* John Masefield describes the Somme line before the battle in *The Old First Line;* H. G. Wells describes *Italy, France, and Britain at War;* Ambassador James W. Gerard contributes *My Four Years in Germany;* Herbert Bayard Swope puts careful observation into *Inside the German Empire;* Thomas Curtain writes a valuable book, *The Land of Deepening Shadow;* and Hugh Gibson, first secretary of the legation in Brussels, adds much first hand information in his *Journal from Our Legation in Belgium.* President Wilson's messages to Congress are collected in a little volume, *Why We Are at War;* Gilbert Murray writes on *Faith, War, and Policy* in his always graceful and vigorous style; David Jayne Hill discusses *The Rebuilding of Europe;* Nicholas Murray Butler writes *A World in Ferment;* and Morris Jastrow, *The War and the Bagdad Railway.*

Of personal narratives some of the best are: Donald Hankey's two volumes of interpretations, *A Student in Arms;* Capt. Gilbert Nobb's *On the Right of the British Line;* Conningsby Dawson's letters, *Carry On;* Victor Emmanual Chapman's *Letters from France,* accounts of experiences in the air; James R. McConnell's *Flying for France;* A. Clifton-Shelton's *On the Road from Mons;* Helen G. Mackay's *Journal of Small Things,* a book of vividness and insight; William Boyd's *With a Field Ambulance at Ypres;* Charles Wadsworth Camp's *War's Dark Frame;* Edith Geraldine Mitton's *The Cellar-House of Pervyse;* Charles H. Barber's *Besieged in Kut and After;* Arthur Bartlett Maurice's *Bottled Up in Belgium;* Mildred Aldrich's *On the Edge of the War Zone;* John Hay Beith's delightfully whimsical *All In It—K (1) Carries On; Private Peat* by Harold R. Peat; and Arthur Guy Empy's *Over the Top,* an account which makes no literary pretensions, but is the best selling war book of the year in the United States because of its simplicity, concreteness, and action unencumbered by reflection.

TRAVEL. In spite of restricted fields and submarines, books on travel continue to flourish. Among the best are: Archdeacon Hudson Stuck's delightful account, *Voyages on the Yukon and*

Its Tributaries; Harry A. Franck's *Vagabonding down the Andes;* Father John Augustine Zahm's collection of Indian legends of the Gilded King, *The Quest of Eldorado;* Reginald Farrer's vivid *On the Eaves of the World,* a story of travels on the Tibetan border; H. G. Dwight's exquisite *Persian Miniatures;* W. J. Childs's *Across Asia Minor on Foot;* and Coxwell C. Fillingham's *Through Russia in Wartime.* Other books on Russia are: *Russia in 1916* by Stephen Graham; *Russia as I Know It* by Harry de Windt; *The Russians—An Interpretation* by Richardson Wright; and *White Nights and Other Russian Impressions* by Arthur B. Ruhl. T. Morris Longstreth writes *The Adirondacks;* Walter Prichard Eaton some charming essays in *Green Trails and Upland Pastures;* Rear Admiral Robert E. Peary gives interesting details in *Secrets of Arctic Travel;* and Leland Haworth tells his experiences *On the Headwaters of Peace River.* Outside of Russia, Europe is represented by a few volumes: Eugenie M. Fryer's *Hill Towns of France,* and George Wharton Edwards's *Vanished Halls and Cathedrals of France;* Sir Thomas Graham Jackson's *A Holiday in Umbria;* Agnes Ethel Conway's *A Ride Through the Balkans;* Mrs. Demetra Brown's *The Heart of the Balkans;* and Lucy M. J. Garnett's *Balkan Home Life.* The Northwest appears in George Byron Gordon's *In the Alaskan Wilderness,* and in W. F. Bade's arrangement of John Muir's 1881 journal of an expedition through Bering Sea to the Arctic—*The Cruise of the Corwin.* Hyatt Verrill writes an informative *Book of the West Indies,* and Luther K. Zabriskie a timely *The Virgin Islands of the United States of America. Brazil To-day and To-morrow* is by Lillian E. Elliott; *In the Wilds of South America* is by Leo E. Miller; while W. H. Koebel adds to his already long list of surveys: *Paraguay,* and also *Central America.* Charles Burke Elliot, a member of the Philippine Commission, publishes in two volumes, *The Philippines,* a complete account of American achievement in the islands. Alfred M. Hitchcock contributes *Over Japan Way;* T. Fujimoto, *The Story of the Geisha Girl;* and Edward S. Morse, *Japan Day by Day,* a several years' journal by a careful and intelligent observer. Alice Tisdale writes *Pioneering Where the World Is Old,* ten years' experience in Manchuria; and W. H. and Fanny Bullock Workman tell a story of adventure in *Two Summers on the Ice Wilds of Eastern Karakoram.*

Of the United States there are many accounts, including: *The Top of the Continent* by Robert S. Yard; *American Adventure,* through the South, by Julian Street and Wallace Morgan; *Old Seaport Towns of the South* by Mildred Cram; *Memories of Old Salem* by Mary H. Northend; and *Chicago,* an interpretation by H. C. Chatfield-Taylor. New York City appears in *The Book of New York* by Robert Shackleton; *A Loiterer in New York* by Helen W. Henderson; and *Greenwich Village* by Anna Alice Chapin.

LITHUANIA. Formerly a grand duchy. The name Lithuania is not used now of any political division, but is applied to a region embraced largely in the Russian governments of Vilna, Grodno, Mogilev, Vitebsk, and Minsk. These governments have an area of 102,632 square miles. At the last Russian census, the number of Lithuanians in European Russia was 2,766,805; in addition, there were 310,631 in Poland. The Polish Lithuanians are almost wholly in the government of Suwalki, where in 1897 they formed over 52 per cent of the inhabitants (the area of Suwalki is 4846 square miles). In racial type the Lithuanians are more nearly Teutonic than Slavic. They are mostly Roman Catholics. Their speech is one of the most archaic and highly inflected of the living Indo-European languages.

LITTLE LEAF. See Botany, *Plant Diseases.*

LIVE STOCK. See Stock Raising.

LIVONIA. A government of Russia, one of the Baltic Provinces, bordering the Gulf of Riga and lying between Esthonia and Courland. Livonia passed from Poland to Sweden in 1660 and from Sweden to Russia in 1721. Area, 18,158 square miles; population, as estimated January 1, 1915, 1,778,500. About 43 per cent of the inhabitants are Letts and an almost equal number Esthonians. Many of the more influential families are of Germanic descent. About four-fifths of the inhabitants are Lutherans. It is stated that Livonia excels all other Russian governments in its public school system, nine-tenths of the children receiving regular instruction in times of peace. Arable land is largely in the hands of wealthy nobles, who hold enormous estates, which are cultivated according to the most modern methods. The chief products are rye, barley, oats, and potatoes. The capital and largest city is Riga, which before the great war had an estimated population of 569,000 and was the third seaport of the Russian Empire. It is situated about ten miles above the mouth of the Dvina and 363 miles by rail southwest of Petrograd. Its importance as a seaport is due in large measure to the fact that by means of the Dvina and canals it has water connection with the basins of the Volga, which flows into the Caspian, and the Dniester, which enters the Black Sea. Two years before the outbreak of the war its import and export trade totaled $160,000,000. Of its population, about 47 per cent are of German descent, while about 23 per cent are Letts and about 25 per cent are Russians. The prosperous merchant class of Riga consists largely of Germans.

The town of Dorpat (Yurav, Yuriev), 156 miles by rail northeast of Riga, had, before the war, an estimated population of 44,100. Its chief claim to distinction is its university, founded by Gustavus Adolphus, suppressed by Peter the Great in 1710, and reopened at the beginning of the nineteenth century by Alexander I. German was the language of the faculty until 1895, when it was superseded by Russian except in the Lutheran theological faculty. The university has a famous astronomical observatory.

The large island of Oesel and the smaller islands of Moon and Rundo belong to Livonia. Oesel, which has an area of 1010 square miles, almost shuts off the Gulf of Riga from the main waters of the Baltic Sea. It has a population of about 65,000, mostly Esthonians. Its chief town is Arensburg, with about 5000 inhabitants.

LLOYD GEORGE, David. See War of the Nations, *The Diplomacy of the War,* and *Military Operations* (20).

LOAN AND TRUST COMPANIES. See State Banks.

LOCKS. See Canals; Dams.

LOCKWOOD, Belva Ann Bennett. An American suffragist, peace advocate, and lawyer, died in Washington, D. C., May 19, 1917. She was born at Royalton, N. Y., in 1830. Her first husband, U. H. McNall, died when she was twenty-three and she took up teaching for a livelihood. Her personal inability to get pay equal to that paid men led her to champion the cause of women's rights, in which she was one of the earliest and most important pioneers. At a time when higher education for women was frowned upon, she attended Genesee Wesleyan Seminary and Genesee College at Lima, N. Y., graduating in 1857. Then she resumed teaching as preceptress of the Lockport (N. Y.) Union School and later as head of the Gainesville Seminary at Oswego. Her relief work during the Civil War led to her being called to Washington to take charge of the Union League Hall. At Washington she was married in 1868 to Dr. Ezekiel Lockwood, a Baptist clergyman, who died in 1877. By this time Mrs. Lockwood had become established as a lawyer, for she had graduated in 1873 from the National University Law School and been admitted to the bar of the District of Columbia. In 1879 she secured the passage of a bill by Congress admitting women to practice before the Supreme Court of the United States, and she herself was the first to take advantage of the newly acquired right. She appeared in this court several times, and also in the Court of Claims. In one notable case she helped to win a judgment of $5,000,000 for the Eastern Cherokees. Throughout her professional career she found time for the causes of suffrage, temperance, and world peace. Her contribution to the first of these was so great that the Equal Rights party, in 1884 and again in 1888, showed its appreciation by nominating her for president of the United States. She was the only woman ever so honored. In 1890 she went to Oxford, England, to take university extension courses. Again in 1896 she went abroad, this time as representative of the United States at the Geneva Congress of Charities and Corrections. From then on Mrs. Lockwood was as well known among European publicists as among American. She was a delegate to International Peace Congresses at Milan (1906), London (1908), and Rome (1911), to the Arbitration Convention in New York in 1907, and to the Women's Convention at Budapest, Hungary, in 1913. She was placed on the nominating committee for awarding the Nobel Peace Prize, was elected member of the Commission of the International Peace Bureau at Berne, and honorary member of the association created at Brussels in 1913 for the heads of the international societies. She also served as president of the Woman's National Press Association, and of the District of Columbia Woman Suffrage Association. She wrote and lectured on the subjects in which she was interested. Syracuse University gave her an honorary A.M. in 1871 and LL.D. in 1908.

LOCOMOTIVES. See Railways.

LORETTOITE. See Mineralology.

LOS ANGELES AQUEDUCT. See Aqueducts.

LOUISIANA. Population. The population of the State in 1910 was 1,656,388, and on July 1, 1917, it was estimated to be 1,856,954.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	2,847,000	42,246,000	$61,679,000
	1916	2,184,000	44,814,000	42,125,000
Oats	1917	84,000	1,873,000	1,761,000
	1916	110,000	2,090,000	1,421,000
Rice	1917	500,000	18,250,000	34,675,000
	1916	443,000	20,392,000	18,353,000
Potatoes .	1917	25,000	1,600,000	2,944,000
	1916	25,000	1,625,000	2,714,000
Hay	1917	260,000	*a* 416,000	5,949,000
	1916	260,000	442,000	4,862,000
Tobacco .	1917	600	*b* 210,000	74,000
	1916	200	90,000	25,000
Cotton ..	1917	1,850,000	*c* 615,000	82,102,000
	1916	1,250,000	443,000	42,324,000

a Tons. *b* Pounds. *c* Bales of 500 lbs. gross weight.

Mineral Production. The output of petroleum in the State in 1916 decreased from the output in 1915 by 2,943,401 barrels, or 16 per cent. The value, however, increased $3,865,121, or 36 per cent. The record for production of oil in the State was made in 1915 when the total production was 18,191,539 barrels, valued at $10,804,653.

The production of natural gas in 1916 was valued at $2,660,445 compared with $2,163,934 in 1915.

Transportation. The railway mileage of the State including main track and branches on June 30, 1916, was 5316. The railroads having the longest mileage were: The Texas and Pacific, 805; the Louisiana Railway and Navigation Co., 342; the Louisiana, Texas, and Steamship Co., 416; the St. Louis, Iron Mountain, and Southern R. R., 572.

Education. The total school population of the State according to the census of 1915 was 538,119. The enrollment in the public schools was 346,864 with the average daily attendance of 251,297. The number of female teachers was 6437 and the number of male teachers was 1515. The average monthly salary of white teachers was $73.20. The total expenditure for school purposes was $5,875,735.

Charities and Corrections. The charitable and correctional institutions of the State include the Institute for Deaf and Dumb at Baton Rouge, the Institute for the Blind at Baton Rouge, the Soldiers' Home at New Orleans, the Insane Asylum at Jackson, the Charity Hospital at New Orleans, the Charity Hospital at Shreveport, and the State Penitentiary and Convicts' Farm.

State Officers. Governor, R. G. Pleasant; Lieutenant Governor, Fernand Mouton; Secretary of State, James J. Bailey; Treasurer, Henry Hunsicker; Auditor, Paul Capdevielle; Adjutant-General, C. C. McCrory; Attorney-General, A. V. Coco; Superintendent of Education, T. H. Harris; Commissioner of Agriculture, H. D. Wilson; Commissioner of Insurance, the Secretary of State—all Democrats.

Judiciary. Supreme Court: Chief Justice, F. A. Monroe; associate justices, O. O. Provosty, Paul Leche, W. B. Sommerville, Chas. A. O'Neill.

LOUISIANA STATE UNIVERSITY. A coeducational State institution of learning at Baton Rouge, La. In the fall of 1917 there were 728 students and 91 members of the faculty; the summer session of 1917 enrolled 615 students; on the teaching staff of the experiment station there are 23 teachers, and the university has 32 extension workers. Volumes in the library numbered 37,550. The university was founded in 1860. President, Thomas D. Boyd, LL.D.

LOWER AUSTRIA. A crownland of Austria. Area, 7654 square miles. Population at census of December 31, 1910, 3,531,814 (12.36 per cent of the Austrian total), as compared with 3,100,493 in 1900. Austrian subjects in 1910, 3,264,110; of these, German was the vernacular of 3,130,536 (95.91 per cent); Bohemian, Moravian, Slovak, 122,329 (3.75). Catholics numbered 3,239,573 (91.73 per cent of the population); Jews, 184,779 (5.23); Evangelicals, 92,620 (2.62). The capital is Vienna. Lower Austria has a diet of 127 members and is represented by 64 members in the Austrian Reichsrat.

LOYOLA UNIVERSITY. A Roman Catholic institution of learning founded in 1870 as St. Ignatius's College, and so named until 1909. It is located at Chicago, Ill. Women are admitted to the graduate departments. In the fall of 1917 there were 2044 students and 207 members of the faculty. Volumes in the library numbered 74,000. A gift of 2000 volumes on Napoleon was received in 1917. The university bought the Chicago College of Medicine and Surgery and combined it with the school of medicine, Dr. Lawrence Ryan being made dean. President, Rev. John A. Ferry, S.J.

LUCE, Stephen Bleeker. An American naval officer, born in Albany, N. Y., March 27, 1827; died on July 29, 1917. He was appointed a midshipman in 1841 and gradually rose through the various grades until he became a rear admiral in 1885. He retired in 1889. He was a founder of the Naval War College at Newport, R. I., and was its first president. He spent forty-eight years in actual naval service, of which thirty-eight were spent at sea. He fought in the Mexican and Civil Wars. When he was rear admiral he was in command of the North Atlantic Squadron. He published *Seamanship*, and edited the *Patriotic and Naval Songster*.

LUMBER. See Forestry.

LUPULIN. See Hops.

LUTHERANS. The Lutheran Church is the third largest denomination in the United States, where it had, in 1917, 3,639,208 baptized members (including Canadian members), 2,448,412 confirmed members or communicants, 15,266 churches, and 9788 ministers. In Canada, according to the latest available statistics, there were about 230,000 communicants, about 135 ministers, and about the same number of churches. In Canada the Lutheran church conducts services in thirteen different languages. The value of Lutheran church property in the United States and Canada in 1917 was $119,990,293. No form of church government is held to be essential, and the services and organization are carried on under Congregational, Presbyterian, and Episcopal forms. There are five general church bodies: the General Council, founded 1867; General Synod, founded 1820; Synodical Conference, founded 1872; United Synod South, founded 1886; United Norwegians; also a number of independent synods. In 1917 the Lutheran Church had 8944 Sunday-schools, with 85,656 officers and teachers, 1,732,393 scholars; and 5740 parochial schools, with 4277 teachers and 247,053 scholars.

General Council. The General Council in 1917 had 760,441 baptized members, 531,978 confirmed members or communicants, 2631 churches, and 1779 ministers.

General Synod. There were in 1917 474,740 baptized members, 364,072 confirmed members or communicants, 1857 churches, and 1438 ministers.

United Synod South. In 1917 there were 73,510 baptized members, 53,226 confirmed members or communicants, 484 churches, and 257 ministers.

Synodical Conference. In 1917 there were 1,244,520 baptized members, 807,017 confirmed members or communicants, 3689 churches, and 3201 ministers.

Norwegian Lutheran Church of America. In 1917 there were about 485,000 baptized members, about 300,000 confirmed members or communicants, 3378 churches, and 1247 ministers.

Independent Synods. Excluding the Norwegian Lutheran Church of America, the Independent Synods in 1917 had 600,997 baptized members, 392,119 confirmed members or communicants, 3227 churches, and 1866 ministers.

For 1917 the Lutherans had an increase of 3316 in confirmed members or communicants, as compared with 1916, and a decrease of 135,566 in baptized members, as compared with 1916. In 1917 there was an increase of 197 in the number of churches over the number of the previous year, and a decrease of 43 ministers, as compared with 1916. In 1917 the Lutherans had 14 American societies of foreign missions, with 392 missionaries, 2072 native helpers, 95,025 native Christians, 33,100 pupils in mission schools, and an income of $564,180. These figures for foreign missions show a substantial and encouraging increase over 1916. On account of the world war no data for 1916-17 are available concerning the thirty-five European societies supported by Lutherans in the work of foreign missions. The work of foreign societies is much interrupted, many missionaries being seized and held as prisoners of war. In 1917 the Lutherans had 27 theological seminaries, 41 colleges, 58 academies, and 7 ladies' colleges and seminaries.

The results of the Quadri-Centennial Celebration of the Lutheran Reformation, which was enthusiastically observed in the United States in 1917, are reported as important in unifying various Lutheran church bodies. The Norwegian Lutherans merged into one their three separate bodies and the General Council, General Synod, and United Synod are reported to be about to form the United Lutheran Church of America. The United Synod South is facing serious problems and preparing an energetic campaign of progress. Its main difficulties relate to the revival of country congregations, increase of home and foreign missions, and especially the evangelization of the negro. See Religious Denominations and Movements.

LUXBURG, Count von. See War of the Nations, *The Diplomacy of the War.*

LUXEMBURG. A grand duchy, in central Europe, bounded by Germany, Belgium, and France; it formed part of the Germanic confederation, 1815-66, and is still included in the German "Zollverein." In 1867 the treaty of London declared it a neutral territory under the sovereignty of the King of the Netherlands, on whose decease, November 23, 1890, it passed to the Duke of Nassau. Area, 2586 square kilometres (988 square miles); population, December 1, 1910, 259,891, nearly all Roman Catholics. Luxemburg, the capital, had 20,848 inhabitants. There are 325 miles of railway; 439 miles of telegraph line; post offices, 133. Iron production in 1915, 980,384 tons. The area under principal crops in hectares and yield in metric quintals for two years are shown in the table below.

	Hectares		*Quintals*	
	1917	*1916*	*1917*	*1916*
Wheat	8,800	11,057	105,600	117,915
Rye	6,750	9,482	74,250	110,662
Barley	2,800	2,030	33,600	27,293
Oats	22,500	28,005	292,500	394,850
Potatoes	10,750	13,879	1,612,500	808,633

The budget for 1917-18 estimated the revenue at 43,761,428 francs; the expenditure at 48,045,794. The amount paid to Luxemburg by Germany on account of the German invasion is estimated at $256,000. The debt amounts to 45,754,917 francs. The floating debt, for public works and railway construction, is limited to 19,335,774 francs. The reigning house of Nassau became extinct in the male line with the death of Grand Duke William, February 25, 1912. He was succeeded by his daughter, Marie Adelaide (born June 14, 1894), who attained her majority and was formally enthroned June 14, 1912. Her sister, Princess Charlotte (born January 23, 1896), is heiress presumptive.

MABON, William. An American alienist, died in New York February 9, 1917. He was born at New Durham, N. J., in 1861, and studied at Bellevue Hospital Medical College, in New York City. After some years of experience as a physician in State hospitals in New Jersey and New York, he served as superintendent of the Willard and St. Lawrence State Hospitals and in 1903-04 as superintendent of Bellevue and its allied hospitals. From 1904 to 1906 he was president of the New York State Commission in Lunacy and thereafter superintendent of the Manhattan State Hospital on Ward's Island. Dr. Mabon was influential in promoting improved treatment of mental disorders and in raising the standards of State hospitals for the insane. He was called in to testify as alienist in many famous murder and other cases, notably in the Thaw case and the Eno will case. He was a member of the executive committee of the National Committee for Mental Hygiene.

McALPIN, Edwin A. General McAlpin, formerly adjutant general on the staff of Governor Morton of New York State, died on April 12, 1917. He was born on June 9, 1848. He attempted to enlist in the Civil War, but was prevented by his father on account of his extreme youth. He enlisted as a private in the 7th Regiment N. Y. N. G. in 1869. In 1885 he became colonel of the 71st Regiment. In 1895 he was appointed adjutant general of the State by Governor Morton, with the rank of major general. He was the head of a large tobacco concern built up by his father and was part owner of the Hotel McAlpin in New York City. He was an active worker in the Republican party and a member of many organizations.

MACAO. A city on the island of Macao, at the mouth of the Canton River, China. The island, with the adjacent islets, Coloane and Taipa, is a Portuguese dependency, having an area of four square miles. Population, 74,866. Although it has lost much of its former importance since the acquisition by the British of Hongkong, it still has a large trade. The Portuguese press reports the sale of Macao to Japan early in 1917.

McCOOK, Anson George. An American soldier and politician, born at Steubenville, Ohio. on October 10, 1835; died on December 30, 1917. After having gone to the West during the gold discoveries, he returned East and enlisted as a captain in the Second Ohio Volunteers during the Civil War. In 1865 he was brevetted brigadier general of volunteers. At the close of the war he practiced law in Ohio until 1873 when he moved to New York, where he was admitted to the practice of law in the courts of that State. He founded *The Law Journal* and was president of the New York Law Publishing Company until his death. He was elected to Congress from the 8th New York District for three terms. He was secretary of the Senate of the United States from 1884 to 1893. He was city chamberlain of New York under Mayor Strong.

MACDONALD, Sir William Christopher. A Canadian capitalist and philanthropist, died in Montreal, in June, 1917. He was born in 1831 at Glenaladale, Prince Edward Island, to which island one of his ancestors had brought over the first Scottish settlers. After his early education he removed to Montreal, where he became an importer, commission merchant, and manufacturer of tobacco, and eventually director of the Bank of Montreal. He also became president of the Legislative Council of Prince Edward Island. In 1898 he was knighted. Macdonald gave generously of the large fortune he acquired, especially to McGill University and Macdonald Agricultural College (affiliated with McGill), his total benefactions to the two institutions amounting to more than $12,500,000. He was a governor of McGill University and also of the Montreal General Hospital.

MACEDONIA. A region or district having no definite political boundaries but corresponding nearly to the former Turkish vilayet of Saloniki and the eastern part of the vilayet of Monastir. It extends west and south of the Rhodope Mountains, and its southeastern part borders the Ægean Sea. Anciently Macedonia was a famous kingdom. The name was revived in the nineteenth century, when the region was often the scene of racial strife, especially between the dominating Turks and the various other nationalities settled there (Greek, Bulgar, Serb, etc.). In 1913 Macedonia was partitioned among Greece, Serbia, and Bulgaria, the greater part being taken by Greece. The population is probably upwards of 1,200,000. The chief cities include Saloniki (with about 160,000 inhabitants), Monastir (60,000), Kavala (45,000), Seres (18,700), Veria (14,000), Drama (13,000), Florina (10,000). See War of the Nations.

McGILL UNIVERSITY. An institution of learning at Montreal, Can. In the fall of 1917 there were 1085 students and 249 members of the faculty; the enrollment has been considerably reduced since the outbreak of the great war.

Volumes in the library numbered 198,200. Productive funds in 1917 amounted to $8,957,969 and the income from all sources to $892,689. Bequests during the year included $15,000 from Dr. James Douglas for library purposes; from Sir W. C. Macdonald: $500,000 as an endowment fund for the medical school, $300,000 as an endowment fund for the conservatorium of music, $1,000,000 as an endowment fund for Macdonald College, and $20,000 as an endowment fund to provide traveling scholarships in the faculty of law; $10,000 from Dr. George Ross for the faculty of medicine; and $13,193 from Miss Mary Teskey as an endowment fund for the benefit of the faculty of fine arts. The university was founded in 1821 and was reorganized in 1852. Principal and vice-chancellor, Sir William Peterson, K.C.M.G., LL.D., D.Litt.

MACHINE GUN. See Military Progress.

MACKIN CANAL. See Canals.

MACMILLAN EXPEDITION. See Polar Research.

MACVEAGH, Wayne. An American lawyer, diplomat, and statesman, died in Washington, D. C., January 11, 1917. Born near Phoenixville, Chester County, Pa., April 19, 1833, he graduated from Yale in 1853 and three years later was admitted to the bar. From 1859 to 1864 he served as district attorney of Chester County, and in 1863 was a captain of infantry and cavalry when invasion of that part of Pennsylvania was threatened by the Confederates. In the same year he held the chairmanship of the Republican State Committee. His first notable public office was that of Minister to Turkey, under appointment of President Grant. This post he held in 1870-71. For the next two years he was a member of the State Constitutional Convention. President Hayes made Mr. MacVeagh chairman of the Louisiana ("MacVeagh") Commission, to settle certain disputes in that State in 1877, and under Garfield he was attorney-general in 1881. For four years (1893-97), during Cleveland's second administration, he represented the United States as Ambassador to Italy. At the Hague, in 1903, he was chief counsel for his government in the case of the Venezuela arbitration, President Roosevelt having chosen him for this distinction. Mr. MacVeagh was the trusted adviser of many administrations, and indeed is said to have sat at table more frequently than any other American with all the presidents since Franklin Pierce, except Wilson and possibly Andrew Johnson. He was a famous wit, and he and Mark Twain made a famous pair at brilliant Washington gatherings. He contributed to various periodicals articles notable for vigor, lucidity, and elevation. His last contribution to the *North American Review* (July, 1915) was entitled "The Impassable Chasm." Mr. MacVeagh was characterized by Matthew Arnold after his visit to this country as "the most interesting American." His brother, Franklin MacVeagh, also became known as a publicist and was secretary of the treasury under Taft. Consult the *North American Review*, March, 1917, "A Passionate Patriot."

MADAGASCAR. A great island in the Indian Ocean off the east coast of Africa, composing, with its dependencies, a French colony. Antananarivo (Tananarive) is the capital, with 72,000 ihnabitants. The area of Madagascar, with several small dependent islands, is stated at 585,533 square kilometres (226,074 square miles). The population as calculated January 1, 1914, was 3,253,581—14,918 Europeans, 12,905 Asiatics and Africans, 3,225,758 aborigines. Including Mayotte and the Comoro Islands, the population was 3,351,481. The Hova inhabit that portion of the central plateau now known as Imerina, anciently called Ankova—the country of the Hova. Fianarantsoa has about 7000 inhabitants; Tamatave, 7026; Majunga, 4600.

Production, Commerce, etc. Agriculture and cattle raising are the chief industries, and rice is the principal crop. The forests contain valuable timber. The mines yield gold, silver, iron, copper, lead, and zinc.

The export trade of 1915 reached an unprecedented total (£2,642,644; imports, £1,750,694). The requirements of the French army imposed intense activity upon the establishments for preserving and freezing meat, resulting in an export during 1915 of twice that of the previous year. Exports of rice have increased. Simultaneously the increased facilities for interior transit and the new decorticating factories have enabled the natives to extend the area under cultivation of rice. The suppression of German trade and the insufficiency of freight room were hindrances; nevertheless, the prosperity of the island has materially progressed.

MAGNESIOLUDWIGITE. See Mineralogy.

MAINE. Population. The population of the State in 1910 was 742,371, and on July 1, 1917, it was estimated to be 777,340.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	20,000	780,000	$1,778,000
	1916	15,000	645,000	768,000
Wheat	1917	11,000	154,000	362,000
	1916	5,000	135,000	252,000
Oats	1917	170,000	4,930,000	4,190,000
	1916	160,000	5,760,000	3,859,000
Potatoes	1917	150,000	20,250,000	26,825,000
	1916	125,000	25,500,000	36,210,000
Hay	1917	1,160,000	*a* 1,566,000	17,383,000
	1916	1,200,000	1,740,000	21,576,000

a Tons.

Transportation. The total railway mileage of the State on June 30, 1916, the latest date for which statistics are available, was 2289. The railways having the longest mileage were: The Maine Central, 1007; The Bangor and Aroostook, 631; The Canadian Pacific, 177. There was no construction of track during the year.

Finance. The report of the State treasurer for the fiscal year 1916 shows a balance on hand on January 1, 1916, of $1,158,938. The receipts from all sources during the year were $6,865,855, and the disbursements $6,551,676, leaving a balance on hand on December 31, 1916, of $1,473,118.

Education. The total school population in the State in 1917 was 228,426. The enrollment in the public schools was 132,196 with an average daily attendance of 100,535. The number of male teachers was 341 and female teachers, 4627. The average monthly salary of teachers was $47.39. The total expenditures for school purposes was $4,228,965.

Charities and Corrections. The charitable and correctional institutions of the State include the State Hospital at Augusta, the State Hospital at Bangor, the Maine School for the Feeble-Minded, the Bath Military and Naval Asylum at Bath, the Maine Industrial School for Girls at Hallowell, the State School for Boys at South Portland and the Maine State Prison at Thomaston.

POLITICS AND GOVERNMENT. Carl E. Milliken was inaugurated governor of Maine on the first Wednesday of 1917, the opening of the 78th legislature. The legislature was in session fourteen weeks. Four features characterize its legislation. First, it voted to submit the question of woman suffrage to popular ballot. Second, it passed many laws further to restrict the sale of intoxicating liquors. Third, it passed through the most bitter fight in the history of Maine legislation, over the rights of capital and the public, in the water powers of Maine. Fourth, it poured out, in a most liberal way, the public moneys for the support of the State and nation in the world war.

The ballot on woman suffrage was taken by the people, September 10, and the amendment overwhelmingly defeated, 38,838, no; 20,604, yes. Four other subjects of referendum were submitted at the same election. The most important was a provision to give the governor the right to remove delinquent sheriffs. It was carried 29,584 to 25,416. The other three proposed amendments concerned matters of minor interest such as laws regarding division of towns, a change in the military law, and reapportionment of representatives. Of these, only the reapportionment of representatives was carried. The vote on these was small—a total vote of only about 42,000 to 47,000 out of total voting strength in Maine of about 150,000.

In its contest over the water powers the legislature reached no definite conclusions. The House of Representatives stood in general against any legislation which would permit the transmission of hydro-electric power beyond the bounds of Maine. The Senate took an opposite view. Many bills were introduced, the chief of which became the subject of long investigation, the committee summoning experts from all over the United States and Canada. The hearings occupied the attention of the committee for weeks. Every measure looking to the granting of charters to new corporations in water powers was immediately met by the amendment that the said company should not transmit any power beyond the boundaries of the State or unite with any other company so doing. Each of these amendments to the proposed charters was forced through the House under the leadership of Mr. Baxter of Portland, whose name became associated with the policy. Most of the petitioning companies preferred to let their petitions die in the closing hours of the legislature, rather than accept charters with this provision. Thus it ended in a drawn battle.

In temperance legislation, the most important measures adopted make it imperative that the court shall impose a jail sentence in case of conviction for liquor-selling; broaden the terms of the statutes regarding injunctions against owners of buildings where liquor is sold illegally; authorize and direct seizure and confiscation of vehicles in which liquor is brought into the State, contrary to laws; and submit to the popular vote the amendment (ratified September 10, 1917) to the constitution authorizing the governor to remove summarily any sheriff who is delinquent and the same in regard to county attorneys—the latter not a constitutional matter and hence operative on signature by the governor after lapse of ninety days.

Governor Milliken also introduced for the first time in the history of Maine a budget system and the same was lived up to with a certain fidelity that augurs well for its continuance under succeeding governors.

There were eleven arrests in 1917 in Maine on charge of murder. Not one person was sentenced to life imprisonment on charge of murder committed within the twelve months. In four of the eleven cases a plea of manslaughter was accepted. There was no trial of murder which can be classed as "sensational." Seventy people took their lives by suicide in Maine in 1917.

The closest estimate of the number of men enlisted in the war, December 31, 1917, was 10,000. At time of draft, Maine stood second among the States in number of men enlisted proportionate to quota. Her quota was 7064. The First Maine Heavy Artillery was organized and filled by volunteer enlistment in nineteen days. It was originally known as "The Milliken Regiment," named for Governor Milliken. Its different units took the names of some of Maine's prominent men of the past. Reed Battery for Thomas B. Reed; Nelson Dingley Battery; Neal Dow Battery; Burleigh Battery, and others. The regiment went into Camp Greene, Charlotte, N. C., but about 200 men of the Dingley Battery of Lewiston and Auburn and a few from Bridgton and Portland were constituted into the 101st Trench Mortar Battery—the first one ever organized in the American service. This battery is now somewhere in France.

LEGISLATION. Among the more important measures passed by the legislative session of 1917, in addition to those noted above, were the following: Laws relating to domestic relations were amended. Feeble-minded persons are forbidden to contract marriage. Designated State officials are authorized to take possession of the food supply of the State upon the payment of just compensation. Provision was made also for the seizing of buildings, railroads, and other equipment of supplies useful for military service. Provision was made for the care of dependents of men who entered the military service. Under the act these allowances are to be paid by the municipalities, and are reimbursed by the State. A moratorium was established for men in military service. Laws relating to prisoners and the punishment of crimes were amended. Custodians are required to give physical and psychopathic examinations to prisoners, and when necessary to transfer them to State institutions for further examination. The legislature passed laws providing for nonresident fishing licenses, compelling physical connection between steam and electric railroads; for registration of teachers; for pensioning of mothers; for repeal of the peonage law; for compensation to State employees. Provision was made for the safety of travelers on highways. Warning signs are required to be erected on the crossings together with a reduction of speed on or near the crossings. Provision was made for the segregation of the feeble-minded and insane by removal from other institutions. The banking laws were amended in important details. The health department was reorganized and a council was established to supervise the carrying out of the rules. This council, however, has no executive power.

State Officers. The following State officers have been elected, appointed, or have held over from the preceding year: Governor, Carl E. Milliken; Secretary of State, Frank W. Ball, of Dover; Treasurer, Joseph W. Simpson, of York; Attorney-General, Guy H. Sturgis, of Portland; Adjutant-General, George McL. Presson, of Farmington; Auditor, Roy L. Wardwell, of Augusta; Superintendent of Public Schools, A. O. Thomas, of Augusta; Insurance Commissioner, Erastus J. Carter, of Stonington; Bank Commissioner, Frank L. Palmer, of Saco; Commissioner of Agriculture, John A. Roberts. John E. Bunker, of Bar Harbor, was appointed to the Public Utilities Commission, to succeed Charles Mullen, of Bangor, resigned. These are all Republicans except Mr. Bunker, who was appointed to fill the place of a Democrat and Mr. Carter who has held over from the previous administration which was Democratic.

Judiciary. Chief Justice Albert R. Savage, of Auburn, died suddenly June 14, 1917. Associate Justice Leslie A. Cornish, of Augusta, was appointed to succeed him. Albert E. Spear, of Gardiner, a former Associate Justice of the Supreme Court, was appointed to succeed Justice Cornish as Associate Justice. The Supreme Judicial Court is now made up of Leslie A. Cornish, Chief Justice; Associate Justices, Arno W. King, of Ellsworth, George E. Bird, of Portland, George F. Haley, of Biddeford, George M. Hanson, of Calais, Warren C. Philbrook, of Waterville, John B. Madigan, of Houlton, Albert E. Spear, of Gardiner.

MAINE, University of. A co-educational State institution of learning at Orono, Maine. In the fall of 1917 there were 838 students and 156 members of the faculty; at the end of the year 293 students and 35 members of the faculty were in government service. Volumes in the library numbered 59,000. Professor G. W. Thompson was appointed to the chair of English and Professor R. M. Peterson was made professor of Spanish to take the place made vacant by the death of Professor A. P. Raggio. Productive funds in 1917 amounted to $218,300 and the income therefrom to $9915. The university was founded in 1862. President, Robert Judson Aley, LL.D.

MAIZE. See Corn.

MAKUEN, (George) Hudson. An American laryngologist, died at Goshen, N. Y., February 21, 1917. He was born at Goshen in 1855. After graduating at Yale in 1884, he attended Jefferson Medical College in Philadelphia, where, after finishing the course in 1889 he was instructor for three years. From 1896 to his death he held the professorship of defects in speech at the Philadelphia Polyclinic, at the same time serving as laryngologist and otologist to Chester Hospital. Dr. Makuen's monographs and his articles contributed to medical journals on diseases of the throat, nose, and ear, and on voice production, breathing, and defects of speech, brought him a national reputation among medical men. At various times he was president of the American Academy of Medicine, the American Laryngological Society, the American Laryngological, Rhinological, and Otological Society, and chairman of a section of the American Medical Association.

MALACCA. One of the Straits Settlements (q.v.).

MALARIA. The possibility of treating malaria by means of immune serum is suggested by Sotiriades, who reports that he injected serum from one patient with malaria into another patient who had just contracted the disease. The fever disappeared for four days, when a mild attack took place, whereupon a second subcutaneous injection of serum was given, succeeded by another dose on the following day. No further relapses were observed during the twelve days the patient was under observation. The donor of the serum had had no clinical symptoms for several months, although parasites were still present in the blood.

Antimony injections have been tried by several clinicians, but the reported results are not encouraging. The intravenous route of giving quinine seems to be growing in favor, especially where prompt results are demanded. Barbary, for example, has treated 899 malarial patients at the military hospital at Nice by this method. He gives 0.5 gm. of quinine in 125 gm. of physiologic saline solution, together with 1 gm. of ethyl carbamate. The injections were given every third day at first and then at five-day intervals.

MALAY STATES. See Federated Malay States; Johore; Negri Sembilan; Pahang; Perak; Selangor.

MALL, Franklin Paine. An American anatomist, died November 17, 1917, at Baltimore, Md. He was born in 1862 at Belle Plaine, Iowa, and in 1883 graduated in medicine at the University of Michigan. He studied also at the Universities of Heidelberg and Leipzig, and at Johns Hopkins, where he was fellow (1886-88) and instructor in pathology (1888-89). In 1889-92 he was adjunct professor of vertebrate anatomy in Clark University, Worcester, Mass.; professor of anatomy in the University of Chicago in 1892-93, and in the latter year was appointed professor of anatomy at Johns Hopkins. He was president of the Association of American Anatomists in 1905-07. In 1915 he was appointed director of the Department of Embryology in the Carnegie Institution at Washington. He was coeditor of the *Handbuch der Entwicklungsgeschichte des Menschen*, the *American Journal of Anatomy*, the *Anatomical Record*, and the *Journal of Morphology;* and he wrote *Causes Underlying the Origin of Human Monsters* (1908). He was a member of many scientific societies.

MALTA. An island (91½ square miles) in the Mediterranean Sea, which with the islands of Gozo (25⅘ square miles), Comino (1 square mile), and Filfla and Cominotto (mere islets), forms a British crown colony. The principal harbor is one of the finest in the world; it is very deep, and large vessels can anchor alongside the shore. It is an important port of call for vessels passing to and from the East and the Suez Canal, being about half-way between Gibraltar and Port Said. There is an extensive arsenal and important dockyard, Malta being the headquarters of the Mediterranean Fleet. The island is strongly fortified and garrisoned. Total civil population, 1911 census, 213,395; estimated March 31, 1916, 220,968. Valletta, the capital, had 44,143 inhabitants, including suburbs (Floriana, Sliema, and St. Julien's); the Three Cities (Senglea, Cospicua, and Vittoriosa), 26,551; Città Vecchia (the old capital), 8896; Victoria (formerly Rabat), 5655. The natives are of Punic origin, and their speech is said to be derived from the Carthaginian and Arabic languages; about 70 per cent of its vocabulary is Semitic, but grammatical structure is derived from the Latin. Valletta is the coaling station and the centre of a large transit trade. There are 7¾ miles of railway. Imports and exports, 1915-16, £3,452,069 and £563,518. Revenue, 1915-16, £463,002, expenditure, £410,389. Tonnage entered, 12,372,512 (British, 1,573,124).

MAMMOTH DAM FAILURES. See DAMS.

MANCHURIA. A portion of the Chinese Republic, but not of China proper, known as "the three eastern provinces." It lies east of Mongolia and the province of Chihli, and extends northward from the Yellow Sea and Korea to the Amur River, which separates it from Siberia. In November, 1917, it was announced that the Chinese government had under consideration a redefinition of the Korean boundary. Estimated area, 362,483 square miles. Estimates of population vary widely. A calculation based on the 1910 enumeration of households places the total in that year at 12,104,000. "The three eastern provinces" are: at the north, Heilungkiang, or the Amur Province, with 202,703 square miles and 1,607,000 inhabitants; Kirin, 105,019 square miles, 5,501,000 inhabitants; at the south, Shengking (Fengtien), 54,761 square miles, 5,996,000 inhabitants. Chief towns: Mukden, capital of Shengking, with an estimated population of 158,000; Kirin, capital of Kirin Province, 100,000 (this estimate probably too high); Tsitsihar, capital of Heilungkiang, 60,000; Newchwang (Yingtze), Newchwang City, Harbin, Liaoyang, Tiehling, Sansing, Antung, Kwangchengtze (Changchun). The Manchu population has practically disappeared, and the country has been colonized from the northern provinces of China proper.

Manchuria has one of the richest soils in the world, and it has grown more rapidly in wealth than any other part of the Chinese dominions. Its recent development is due largely to improved railway facilities and to the development of the soy bean industry. The soy bean is Manchuria's chief product and one of China's leading exports. The Chinese export of the soy bean in 1915 was 614,250 tons, and of bean cake 695,600 tons. Other products are millet, Kafir corn, wheat, rice, and tobacco. Reported imports for 1915 are £12,671,183, and exports £28,415,343 (including the trade of the Japanese leasehold of Kwantung, q.v.). Both Russian and Japanese interest have been exerted to develop the commercial and industrial interests of the country. Japanese influence extends from the coast northward to Kwangchengtze, the terminus of the South Manchuria Railway, which at that point joins the Russian railway. Manchuria is connected by rail with China proper and Korea and is crossed by the Trans-Siberian line. About 2200 miles of railway are in operation. Formerly Manchuria was administered by a governor-general resident at Mukden, but this office has been abolished.

Under rights conferred upon Japan in 1917 to construct five railway lines in Manchuria and Mongolia, the extension of the line to Taonanfu was being considered in the progress of the construction of a line between Kaiyuan and Hailung Cheng. The latter line was to be 120 miles in length and would serve many important towns of eastern Manchuria.

MANITOBA. The easternmost of the Prairie Provinces of Canada. It is situated east of Saskatchewan and west of Hudson Bay and Ontario, and extends northward from the American boundary to lat. 60° N. Capital, Winnipeg, the third largest city of Canada (Montreal being first and Toronto second). The estimated area is 251,832 square miles, of which 19,906 water. The population at the census of June 1, 1916, was 553,860 (294,609 males, 259,251 females), as compared with 461,630 in 1911, 365,688 in 1906, and 255,211 in 1901. Population of Winnipeg in 1911, 163,000; Brandon, 15,215; St. Boniface, 11,021. That part of the province north and northeast of Lake Winnipeg is almost without inhabitants excepting hunters and fur traders.

The provincial government is administered by a lieutenant-governor, appointed for five years by the governor-general of Canada; he acts through a responsible ministry of seven members. The Legislative Assembly consists of one chamber of forty-nine members, elected by universal adult suffrage for five years. In the House of Commons of the 13th Parliament, elected December 17, 1917, Manitoba is represented by fifteen members. The lieutenant-governor in 1917 was Sir James Albert Manning Aikins, appointed August 3, 1916, in succession to Sir Douglas Colin Cameron. Premier, T. C. Norris. See CANADA.

MANURE. See CHEMISTRY, INDUSTRIAL; FERTILIZERS.

MARATHONS. See CROSS-COUNTRY RUNNING.

MARBLE, MANTON. An American journalist, born in Worcester, Mass., on November 16, 1834; died in England on July 24, 1917. He was educated at the University of Rochester and after his graduation engaged in journalistic work in Boston. He removed to New York, and with others founded the New York *World*, of which he was proprietor and editor from 1862 to 1876. He took a rather hostile attitude toward the Civil War, his paper being temporarily suspended in 1864, by President Lincoln, for the printing of false dispatches. While he held that war was inevitable after the firing on Fort Sumter, he opposed the carrying of the executive power beyond constitutional limits. He supported the Geneva convention and made a bitter attack on the Tweed ring. In 1885 he was appointed a special envoy to Great Britain, France, and Germany on bimetallic questions by President Cleveland. He wrote: *The Presidential Counts* and *A Secret Chapter of Political History* (1878).

MARCONI, WILLIAM. See UNITED STATES AND THE WAR.

MARET, HENRY. A French journalist and politician, died in Paris, January 7, 1917. He was born at Saucerre (Cher) in 1838 and belonged to a distinguished family. After studying at the lycée of Bourges, he went to Paris to be a government employee. He began to write for small papers and then contributed to the *Opinion nationale* and *Illustration*, and helped edit *Charivari*. Commencing in 1869 he contributed to such republican opposition journals as *Réforme*, *Presse libre*, and *Rappel*. For the *Mot d'ordre,* just founded by Henri Rochefort, he wrote in 1871 a series of articles attacking the national assembly. He took his stand against the policies of Gambetta. Because Maret had accused those in control of negligence, he was tried and convicted of disrespect to the government, and was sentenced to five years in prison and a 500 francs fine. The prison term was commuted to four months on account of his health. At this period he collaborated on various papers—the *Avenir national,* the *Constitution,* the *Marseillaise,* and the *Corsaire,* and became editor in chief of the new *Mot d'orde.* This post was succeeded in 1880 by that of director of the *Vérité.* From 1885 to 1897 he directed the *Radical.* Maret served for many years as a deputy, noted for his liberal views on public questions and for his independence of party. He sat in the Chamber with the extreme left. His writings include many brilliant satirical sketches, dramatic criticism, romances such as *Les compagnons de la Marjolaine* and *Promenades à travers bois,* also a verse comedy, *Le baiser de la reine,* etc.

MARITIME PROVINCES. The provinces of Nova Scotia, New Brunswick, and Prince Edward Island, Canada. The total area is 51,597 square miles; land area, 51,163 square miles, which is slightly smaller than the land area of Alabama. Population (1911 census), 737,955. Population per square mile: Nova Scotia, 22.98; New Brunswick, 12.61; Prince Edward Island, 42.91. See these titles and also CANADA.

MARKETS. See HORTICULTURE.

MARTINIQUE. A French colony; an island of the Lesser Antilles. Area 987 square kilometres (381 square miles); population, 185,385. Fort-de-France, the capital, has about 27,000 inhabitants.

MARYLAND. POPULATION. The population of the State in 1910 was 1,295,246, and on July 1, 1917, it was estimated to be 1,373,673.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	720,000	28,080,000	$39,312,000
	1916	675,000	26,325,000	23,429,000
Wheat ...	1917	675,000	11,475,000	28,758,000
	1916	650,000	10,400,000	17,784,000
Oats	1917	47,000	1,457,000	1,098,000
	1916	46,000	1,357,000	828,000
Potatoes .	1917	60,000	6,000,000	7,140,000
	1916	48,000	4,085,000	5,438,000
Hay	1917	442,000	*a* 552,000	10,985,000
	1916	465,000	688,000	9,632,000
Tobacco .	1917	28,600	*b* 22,594,000	4,519,000
	1916	25,500	19,635,000	3,142,000

a Tons. *b* Pounds.

MINERAL PRODUCTION. The coal production in the State in 1916 was 4,460,046 net tons, valued at $6,947,623, an increase of 279,569 tons or nearly 7 per cent over 1915.

The coal output of the State in 1915 was 4,180,177 short tons, valued at $5,330,845. The chief increase occurred in Garrett County. The number of men employed decreased from 5664 in 1915 to 5633 in 1916.

TRANSPORTATION. The total railroad mileage on June 30, 1914, the latest date for which statistics are available, was 1401 miles of single track. The railways having the longest mileage were: The Baltimore and Ohio, 336; the Philadelphia, Baltimore, and Washington, 329; the Washington and Maryland, 272; the Baltimore, Chesapeake, and Atlantic, 88. There has been practically no construction since this date.

FINANCE. The total receipts for the fiscal year 1914, the latest for which statistics are available, were $12,006,006. The disbursements amounted to $12,999,561, leaving a balance on September 30, 1914, of $1,840,256. The bonded debt of the State in 1914 amounted to $18,685,880.

EDUCATION. The total school population of the State in the year 1914-15, the latest for which statistics are available, was 415,908. The total enrollment in the public schools in 1915-16 was 146,530. This includes the enrollment of the country schools only. The number of teachers in the country schools was 4501. The average yearly salary of teachers in country schools was $399.76.

CHARITIES AND CORRECTIONS. The Board of State Aid and Charities has general control over the charitable institutions of the State. Most of the penal institutions, such as the city and county jails and the penitentiary, do not come under supervision of this board. It has charge of a number of homes and asylums for adults and children, and also has supervision over the general hospitals and insane asylums. State aid is given also to a number of reformatories for children, some of which are under religious auspices and others sectarian.

POLITICS AND GOVERNMENT. There were no elections in the State during the year, and no political happenings of general interest.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below.

It was made a felony to store food products for the purpose of increasing their prices. A State council of defense was created to coöperate with the National Council. The so-called "lazy man's law" was enacted. By this measure all able-bodied men between the ages of 18 and 50, not usefully employed, may be required to register and to work in some public or private employment. Failure to register is made a misdemeanor and failure to do the work assigned is punishable by fine or imprisonment. The act does not apply to persons temporarily unemployed by reason of a strike or other labor troubles. Punishment was provided for the pollution or poisoning of the water supply of the State and also for injury to roads, bridges and public utilities, and other public property. A general moratorium was provided for at the discretion of the governor.

STATE OFFICERS. Governor, Emerson C. Harrington; Secretary of State, Thomas W. Simmons; Auditor, J. Enos Ray; Comptroller, Hugh A. McMullen; Treasurer, John M. Dennis; Adjutant-General, Henry W. Warfield; Attorney-General, Albert C. Ritchie; Superintendent of Education, M. B. Stephens; Commissioner of Insurance, W. Mason Shehan—all Democrats.

JUDICIARY. Court of Appeals: Chief Judge, A. Hunter Boyd; Associate Judges, N. Chas. Burke, William H. Thomas, John R. Pattison, Hammond Urner, John P. Briscoe, Henry Stockbridge, and Albert Constable; Clerk, Caleb C. Magruder.

MARYLAND, UNIVERSITY OF. A non-sectarian co-educational institution of learning located at Annapolis and Baltimore, Md. In the fall of 1917 there were 878 students in all departments except the training school for nurses —arts and science (St. John's College), 210; medicine, 273; law, 110; dentistry, 212; and pharmacy, 73—and 262 members of the various faculties. Thomas Fell is president of St. John's College and also provost of the University of Maryland; Dr. James M. H. Rowland is dean of the medical school; Henry D. Harlan is dean of the law school; the university was founded in 1784.

MASKELYNE, John Nevil. An English conjurer, died in London, May 18, 1917. He was born in 1839 in Cheltenham and was educated there. At sixteen he made his first appearance when with his partner, Cooke, he exposed the Davenport Brothers, spiritualistic impostors. From then on his reputation steadily grew, especially after his London début in 1873. He was able to lease Egyptian Hall, Piccadilly, and there he gave two shows of magic daily until 1904, after which he transferred to St. George's Hall. Two of his successes were the production of an optical illusion by which he seemed to float out over his audience and back again, and his "Psycho," automaton chess player. He wrote *Modern Spiritualism*, *Sharps and Flats*, *The Supernatural*, etc.

MASQUERAY, Emmanuel Louis. An American architect, died in St. Paul, Minn., May 26, 1917. He was born in Dieppe, France, and studied at the Ecole des Beaux-Arts, Paris, where he received the Deschaume and Chaudesaigues prizes. At the Salon of 1883 he was awarded a gold medal. Since 1887 he had lived in the United States and since 1905 in St. Paul. Some of his most important work was done as chief of design of the St. Louis Exposition in 1904. He erected the Cascades, the Colonnade of States and Pavilions, the Agricultural, Horticultural, Fisheries, and Forestry Buildings, also the Louisiana Purchase Monument and twelve bridges. Outside of this achievement he was known as architect of the Long Island College Hospital, Brooklyn, the Cathedral of St. Paul, Minn., the pro-cathedral of Minneapolis, the Cathedral at Wichita, Kans., and the Cathedral and St. Joseph's College at Dubuque, Iowa, and the Iowa Capitol grounds at Des Moines. Mr. Masqueray was a charter member of the American Institute of Architects, and a member of the New York Architectural League and other societies.

MASSACHUSETTS. Population. The population of the State in 1910 was 3,344,516, and on July 1, 1917, it was estimated to be 3,775,973.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	61,000	2,806,000	$6,033,000
	1916	42,000	1,764,000	2,117,000
Oats	1917	12,000	444,000	860,000
	1916	11,000	352,000	232,000
Potatoes .	1917	38,000	4,370,000	7,648,000
	1916	25,000	2,275,000	3,981,000
Hay	1917	460,000	*a* 690,000	13,731,000
	1916	480,000	749,000	14,231,000
Tobacco .	1917	8,400	*b* 11,838,000	4,544,000
	1916	8,900	14,774,000	3,694,000

a Tons. *b* Pounds.

Transportation. The total railway mileage of the State on December 31, 1916, was 4968; of this, 2141 was main line, 1072 second, third, and fourth track, and 1754 side track.

The lines having the longest mileage are: Boston and Albany, 1128; Boston and Maine, 4200; New York, New Haven, and Hartford, 4411.

Finance. According to the report of the State treasurer, for the fiscal year of 1917, there was in the treasury on December 1, 1916, $10,845,633. The receipts for the year ending November 30, 1917, were $71,625,201, and the expenditures were $70,218,874, leaving a cash balance in the treasury on December 1, 1917, of $12,251,959.

The total bonded debt of the State on December 1, 1917, was $131,151,912, while the sinking fund amounted to $43,167,818, leaving a net total debt of $87,984,093.

Education. The total enrollment in the public schools on April 1, 1917, was 601,835. The average daily attendance was 509,183. This includes public day schools, elementary, and high schools. In the public evening schools were enrolled 53,106 pupils, with 2182 teachers. The total expenditure for public evening schools was $397,780. There were in the State in 1917 256 high schools, in which were enrolled 87,705 pupils with 3636 teachers. The total expenditure for high schools was $5,942,903. There was expended for the salaries of principals, teachers, and supervisors $16,805,724. The total expenditure for school purposes was $28,681,999.

Charities and Corrections. The charitable and correctional institutions of the State include the State Infirmary at Tewksbury, the State Farm at Bridgewater, the Norfolk State Hospital, the Lyman School for Boys at Westborough, the Industrial School for Boys at Shirley, the State Industrial School for Girls at Lancaster, the Massachusetts Hospital School at Canton, the North Reading State Sanatorium, the Rutland State Sanatorium, and the Westfield State Sanatorium. The prisons include the State Prison at Boston, the Massachusetts Reformatory at Concord, the Reformatory for Women at Sherborn, the Prison Camp and Hospital at Rutland, the State Farm at Bridgewater. These are under the control of the Board of Prison Commissioners.

Politics and Government. Massachusetts was one of the few States in which elections were held in 1917. On September 25, Governor McCall was renominated in the Republican primaries, and Frederick W. Mansfield for the Democratic. On November 6 Governor McCall was reëlected for the third term. The Republicans also gained a seat in Congress. On November 19, Governor McCall refused to honor a requisition from Governor Cornwell, of West Virginia, to John Johnson, charged with attacking a white girl. The governor gave as his grounds for refusing, his belief that Johnson might not secure a fair trial in West Virginia. On December 17 elections were held in Boston for mayor and other city officers. Andrew J. Peters, formerly assistant secretary of the treasury, defeated Mayor J. H. Curley by more than 9000 votes.

Legislation. Among the more important measures passed at the legislative session of 1917 are those noted below.

Laws relating to judicial procedure were amended in important particulars. Cities and towns were authorized to take steps to conserve the food supply. A census was authorized to be taken at the request of the Council of National Defense. It was provided that the cultivation of land, harvesting, or transportation of agricultural products shall not be unlawful on Sunday during the war. Provision was made for an allowance supplementing the Federal payment of residents of the State not in the public service, to go into the military service. A moratorium limited to mortgages and judgments was provided for in favor of the men in the national service. It applies only to men of the National Guard and the members in the volunteer forces, as it was enacted before the establishment of the new national army by Congress. The publication of campaign matter anonymously was forbidden, and a candidate nominated by some one other than a political party may not use the name of that party in its political designation. The child labor law was amended in several details. A Defense Act was passed authorizing the suspension of the labor law in individual instances after a hearing and under the restrictions imposed by the board granting the suspension. Working men who are injured are permitted to choose their own physician. The Workingman's Compensation Law was amended by the abolition of the arbitration committee, composed of one member of the board, one employer and one employee, who formerly heard disputes. This jurisdiction is now vested in a single member of the board. Laws relating to insurance were amended. An elaborate act forbidding the sale of narcotic drugs except by prescriptions carefully regulated, was enacted. A measure was also passed authorizing the superintendent of the proper hospital to hold a person afflicted with the use of narcotics at the request of a police officer, a physician, a wife, or a husband.

State Officers. Governor, Samuel W. McCall, Rep.; Lieutenant-Governor, Calvin Coolidge, Rep.; Secretary of State, Albert P. Langtry, Rep.; Treasurer, Charles L. Burrill, Rep.; Auditor, Alonzo B. Cook, Rep.; Adjutant-General, Jesse T. Stevens, Dem.; Attorney-General, Henry C. Attwill, Rep.; Secretary of the Board of Agriculture, Wilfrid Wheeler; Commissioner of Insurance, Frank H. Hardison; Commissioner of Education, Payson Smith.

Judiciary. Supreme Judicial Court for the Commonwealth: Chief Justice, Arthur Prentice Rugg; Justices, Edward P. Pierce, William C. Loring, Henry K. Braley, James B. Carroll, Charles A. De Courcy, John C. Crosby.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. A non-sectarian technological institution of learning located at Cambridge, Mass. In the fall of 1917 there were 1698 students and 138 members of the faculty; about 300 students and 10 members of the faculty entered government service in 1917. The library contains 129,811 books and 48,270 pamphlets and maps. Professor Charles R. Cross, head of the department of physics, retired in 1917 and became professor emeritus; Professor E. B. Wilson was appointed head of the department. Among the benefactions during the year were: Charles Hayden, $100,000; estate C. H. Pratt, $900,000; anonymous, $2,500,000; T. C. duPont, $200,000; General Education Board, $250,000; miscellaneous donors, $800,000. The productive funds in 1917 amounted to $9,112,000 and the income to $288,000. The institute was founded in 1861 and moved from Boston to a new site on the Charles River in 1916. President, Richard Cockburn Maclaurin, LL.D. See Harvard.

MATTER, Theories of. See Chemistry.

MAUDE, Sir Frederick Stanley. A British lieutenant-general, who was in command of the British Mesopotamian Expedition. Gen. Maude was fifty-three years old when he died on November 18, 1917. He was the son of Gen. Frederick Maude and was a soldier practically from his boyhood up, having entered the army in 1884. In the Sudan Campaign of 1885 he was decorated with the Medal with the Clasp and the Khedive's Star and in the South African War he was given the Distinguished Order Medal and the Queen's Medal with six clasps. Gen. Maude was well known in Canada and had many American friends. From 1901 to 1904 he was military secretary to the governor-general of Canada. Later he was private secretary to the secretary of state for war. When the present war broke out he was a brigadier general attached to the General Staff of the Fifth Division. He took an active part in the early fighting in France, during which he was wounded. In 1915 he was placed in charge of the evacuation of the Suvla Bay trenches on the Gallipoli peninsula after the failure of the Dardanelles campaign. The British troops were withdrawn and embarked practically before the Turks discovered it and the whole operation was completed without a casualty. In August, 1916, he was placed in charge of the Mesopotamian army after a series of British disasters. Under his command the reorganized and strengthened British army more than retrieved the reverses it had met. Consult the article War of the Nations, *Military Operations*, in the present volume and also the Year Books for 1914, 1915, and 1916.

MAURITANIA. A French West African civil territory, governed from St. Louis (Senegal) by a commission under the direction of the governor-general of French West Africa. The chief towns are Port-Etienne, Boutilimit, Aleg, Moudjeria, Kaedi, Atar, Selibaby, Tidjikdja, etc. See French West Africa.

MAURITIUS. An island in the Indian Ocean 550 miles east of Madasgascar; a British crown colony. Area, 720 square miles. Total population, 368,510; 1915 estimate, 382,740. The natives of European race are in large part French Creoles. Port Louis, the capital, had (1911) with suburbs 50,060 inhabitants; Curepipe, 17,173; Mahébourg, 4068. The cultivation of sugar-cane is the staple industry. Export of sugar, 1915, £3,607,033. Total imports and exports (1915), including shipping charges on home products, £3,204,241 and £3,748,011 respectively. Revenue, 1914-15, £807,587; expenditure, £809,095. Tonnage entered 1915, 374,810. External debt, June 30, 1915, £1,274,390.

MAYO FOUNDATION. See Universities and Colleges.

MAYOTTE AND THE COMORO ISLANDS. A group of islands belonging to France, administered under the government of Madagascar. Area, 2168 square kilometres (837 square miles); population, as estimated January 1, 1914, 97,900, of whom indigenes 96,619, Asiatics and Africans 754, and whites 527.

MEAD, Elizabeth Storrs. An American educator, died at Cocoanut Grove, Fla., March 25, 1917. She was born in 1832 at Conway, Mass., into a family named Billings, and was educated at the seminary at Ipswich, Mass. From 1852 to 1858, she conducted, with her sister, a school at Andover, Mass. The Rev. Hiram Mead, of South Hadley, Mass., whom she married in 1858, died in 1881. Thereafter for many years she was a teacher at Oberlin College till 1883, then at Abbott Academy, Andover, till 1889, and from 1890 till 1900 she was president of Mt. Holyoke College. Oberlin conferred on her an honorary degree of A.M. and Smith College that of L.H.D.

MEAT. See Food and Nutrition; Stock Raising and Meat Production.

MEATLESS DAYS. See Food Control.

MEAT SUPPLIES. See Food and Nutrition; Stock Raising and Meat Production.

MECHANICAL STOKERS. See Railways.

MECKLENBURG-SCHWERIN. A European grand duchy, one of the constituent states of the German Empire. The capital is Schwerin. The grand duchy is bounded by Prussia on the east, south, and west; on the north it borders the western end of the Baltic Sea. Area, 5068 square miles. The population at the census of December 1, 1910, was 639,958, as compared with 607,770 in 1900, 553,000 in 1864, and 308, in 1816. The average annual increase from 1816 to 1910 was 0.78 per cent; from 1900 to 1910, 0.52 per cent. In 1910, communes having upwards of 2000 inhabitants aggregated a population of 304,343. Evangelicals numbered 615,511 (96.18 per cent); Roman Catholics, 21,043 (3.29 per cent). The government is feudal in character. The grand duke in 1917 was Friedrich Franz IV, who was born April 9, 1882, and succeeded his father, Friedrich Franz III, April 10, 1897.

MEDICAL EDUCATION IN THE UNITED STATES. According to statistics compiled by the *Journal of the American Medical Association*, the total number of medical students in the United States for the year ending June 30, 1917, was 13,764, not including special or post-graduate students, and represents a falling off of 258 below the previous year. The high grade colleges, however, show an increase in the number of students, and the fact that 3379 graduates held degrees in arts or science, indicates that the standard of medical education is yearly becoming higher. Of the total number of students 12,925 attended non-sectarian or regular colleges; 580 homeopathic colleges; 259 eclectic colleges. During the year there were 610 women students and 153 graduates, a slight increase over the previous year. The two medical colleges for women had a smaller attendance, while the co-educational schools had a corresponding increase. The two women's colleges graduated twenty-nine students, and the co-educational institutions graduated 124. During recent years some of the oldest and largest medical schools, such as Columbia, Tulane, and the University of Pennsylvania, have admitted women medical students, which explains the loss of attendance at the exclusively female medical schools. During the year two medical colleges were established and one was suspended, the present total being ninety-six. As to fees, data secured from eighty-two medical colleges show that the average student paid $150 tuition fee yearly, while the cost to the college for this period was $419. As evidence that worthy medical students were being helped, thirty-eight medical schools provided 287 scholarships. New York State had the largest number of students enrolled, namely 2223; Illinois 1802; Pennsylvania, 1411. Illinois graduated 531 students; New York, 485 students; Pennsylvania, 401; and Tennessee, 239. The report concludes with the following observation: "It is evident that the reduction in the total number of students and graduates has been in the lower grade colleges, while the number of students and graduates in the higher grade colleges is actually increasing."

MEDICAL PROGRESS. The gathering together of immense numbers of soldiers, made necessary by the great war, and the danger of spreading epidemic diseases incident thereto, has made imperative intensive study of these infections (see Cholera, Insects and the Propagation of Disease, Trench Fever, Typhoid Fever, Typhus). For other topics related to the war, see Paraffin, Gas Poisoning, Military Surgery, Rope, and Shell Shock. The manufacture of munitions and war supplies has developed special ailments among the workers, and augmented the morbidity among them from already prevalent diseases (see Occupational Diseases and Tuberculosis). A considerable number of new drugs, or modifications of old ones, were introduced during the year (see Calcreose, Citresia, Gastron, Mercurophen, Optochin, Salvarsan, and Siomine). Other medical items and statistics will be found under their respective captions.

MENSHEVIK. See Bolsheviks.

MERCUROPHEN. A new antiseptic discovered by Schamberg, Kolmer, and Raiziss, of Philadelphia, who have been engaged in chemotherapeutic investigations, especially with reference to mercurial and arsenical compounds. Mercurophen is chemically oxymercury-orthonitro phenolate. It occurs in the form of an odorless, brick red powder, freely soluble in water. As a germicidal it is fifty times more active than bichlorid of mercury. It is useful for disinfecting the hands, sterilizing rubber appliances and surgical instruments. It is non-irritating and does not injure nickel-plated instruments.

MERRILLITE. See Mineralogy.

MESOPOTAMIA. A division of Asiatic Turkey, in the region of the Euphrates and Tigris rivers, between northern Arabia and Persia. It consists of the vilayets of Mosul, Bagdad, and Busrah. One estimate of area is 143,250 square miles. One estimate of population is 2,000,000, but this figure may be regarded as excessive; the actual number is perhaps less than 1,000,000. See War of the Nations, *Military Operations* (4).

METALLURGY. The world demand for the various metals and their alloys during 1917 naturally led to efforts for extraordinary production rather than development of new technical methods. In some cases, however, where various foreign supplies of ores were cut off, it was necessary to make good the deficiency either by substitution or by improvements that would lead to increased economies. The entrance of the United States into the war as an active participant naturally brought home to America the necessity of rapid and efficient production as a vital matter, and instead of a large output and increased prices for commercial advantage, it became a national interest with the government regulating the supply, production, and export. The developments of the year were rather in mass production than in elaboration of technique, and some of the more significant features of the metallurgical progress and development based merely on the authoritative annual reviews in the *Engineering and Mining Journal*, *The Iron Age*, and *Metallurgical and Chemical Engineering* are summarized in the accompanying paragraphs.

Flotation Process. The record of the year in the development of the flotation process involved litigation and controversy quite as much as technical progress. Decisions were rendered by the courts in several cases, but criticism was made that these decisions were not in sufficiently clear language to provide an unalterable conclusion or settle the matter definitely. The technical mining journals devoted considerable space to the discussion of the legal side of the matter and several research laboratories were engaged in researches to develop processes workable under the patents. The most important technical discussion of flotation in 1917 was concerned with the amount of oil to be used. In the Joplin District, the flotation process to an advanced degree was employed in the southwestern Missouri lead and zinc fields, where it was found to have a distinct use and afforded high grade concentrates. Experimental flotation work with copper ores was carried on, Arizona using it as an auxiliary process to concentration. The addition of flotation made possible the profitable treatment of ores, not only those that could not be handled by gravity, but as an adjunct to gravity concentration. The Murex process, the concentration of lead, carbon, and ores was worked out at Darwin, Cal., and consisted of mixing a magnetic mineral with oil so as to form a paint which would adhere to the ore to be treated upon agitation. The magnetic separator was then used to separate the valuable mineral from the bulk of the ore.

Gold and Silver. With the exception of the improvement of process, no noteworthy metallurgical advance was made in the treatment of gold and silver during 1917. This was particularly true as regards gold which was produced at about the usual rate during the year, but with an increased cost due to supplies, labor, etc. The advance in general, of course, was naturally equivalent so far as the mineral was concerned to a decrease in the value of the metal. Gold production occurred during the year at about the usual rate (see Gold) with the exception of Mexico which was less than normal. In Mexico, the cyanide process dominated, and during 1917 there was practically no change in the standard process. The same held true for the Rand of South Africa, where increased economies were necessary, and the same observations were to be made of Australia and New Zealand where labor was, of course, an important consideration.

With the increased price of silver during the year (see Silver) many mines once abandoned or neglected were reopened, and production was universally increased, all plants being worked at the fullest capacity possible. In cobalt, the application of flotation processes to the various ores was the most significant metallurgical advance, and not only was it believed that it would increase but that it would insure increased economies and a greater yield. In Mexico, with but a fraction of the normal output being turned out and various political and commercial conditions hampering active work, there was comparatively little to be noted. With the stoppage of importation of cyanide from Germany, experiments were undertaken which indicated that a good extraction of silver sulphide ores could be obtained by flotation which was a cheaper and simpler process as regards installation and operation than the cyanide process. The product of flotation naturally was a concentrate which had to be retreated, but even so, the method was distinctly advantageous in many cases. The same shortage of cyanide led to experiments in an Arizona silver mill with the result that a permanent flotation system was installed. In the cobalt district of Ontario, flotation was used as an adjunct to the concentration and cyanide systems previously employed. With the cobalt ores an oil that would be strongly adhesive to the powdered mineral, was required as well as the ordinary frothing agents, and for this purpose creosote with a small percentage of pine oil and somewhat less of tar was employed. Comparative figures were given in a paper by Robert E. Dye before the Canadian Mining Institute in 1917, in which he stated that while it was of advantage to use two processes together, yet where one process is being weighed against the other for a complete installation, flotation would bring superior results to that of cyanide.

Copper. The great activity in the production of copper and the enormous increase in the output which marked the years 1915 and 1916, were experienced in the first half of 1917. At the beginning of the last named year, the various plants had so increased their capacity that ore could be treated and the product refined without delay and with a maximum economy. These processes, however, were interfered with in 1917 by the difficulty of obtaining supplies, high prices, labor troubles, and other agencies which caused a decline in the production for the last six months of the year. The only important plant put in commission during the year was that of the New Cornelia Copper Company in the Ajo district of Arizona which was a leaching and electrolytic works where the ore was crushed and then leached in lead-lined concrete tanks. The solution from these tanks after being enriched was then treated electrolytically and the copper deposited. The Utah Copper Company during the year was installing a plant somewhat similar which was to be completed in 1918. In Michigan, the original ammonia-leaching plant of the Calumet and Hecla Mining Company, capable of handling about 2000 tons, was so successful that it was being doubled, while at Kennecott, Alaska, a new ammonia-leaching plant with a capacity of 800 tons a day, was being designed along similar lines to that which began operations in 1916 with such marked success.

The increase in the production of electrolytic copper refineries continued in 1917, and the maximum capacity of ten such plants at the end of 1917 was 2,788,000,000 pounds as compared with 2,584,000,000 pounds in 1916.

Zinc. The extraordinary production of zinc which occurred in 1915 and 1916 leading to the construction of new plants and the extending of those in existence to their fullest capacity, was not continued in 1917, as the increasing cost of coal and gas fuel, relatively higher cost of ore, and the decrease of consumption due to high prices led to a curtailment of output. Under these conditions a lack of progress in the metallurgy of zinc was inevitable for many of the companies were operating with but slight profit and few developments were contemplated. After several years of work at Bartlesville, a new process of treating zinc was about to be tested on a large scale. Here large tonnage of roasted ore was to be distilled in retorts with the use of relatively small quantities of reducing fuel and relatively unskilled labor. While there would be a low extraction of zinc, possibly 60 per cent, the aim was to be not to burn any zinc during the operation, so that the retorts residues containing considerable lead and zinc would be burned in a Wetherill grate furnace. In this way, by rougher and less expensive methods than that previously in use, a relatively high zinc extraction would be secured. Another tendency of the year was for the large zinc smelters to provide themselves with oxide plants and thus save quite a proportion of the zinc contained in various residues.

Perhaps the most notable feature of 1917 was the fact that several new electrolytic extraction plants went into operation, but none obtained large production. At Park City, Utah, the Judge Mining and Smelting Company had a plant in operation producing about three tons of zinc every 24 hours, which was gradually to be increased to fifteen tons. This was the first zinc plant to be equipped with rotating circular cathodes, or, in other words, the first to use zinc-sulphate electrolyte. Late in the year the plant at Risdon, Tasmania, was put in motion and other plants were proposed for that island.

One of the developments of the year was a large rolling mill built by the New Jersey Zinc Company at Palmerton, and it was expected that developments in sheet zinc rolling in the United States would be reported in the near future. Many metallurgists believed that the use of zinc as a sheet metal might be widely extended, particularly as there would be available in the United States facilities for its production. The manufacture of zinc oxide for pigments and other purposes was another development of promise, and several large smelters were being equipped with oxide plants during the year.

Lead. In 1917 lead and silver sold at an increased price with the result that silver-lead ores in the United States and Mexico figured to a greater extent than previously. In the lower Mississippi Valley, various processes were employed including flotation and blast roasting, but there were few new methods of treatment developed during the year. There were marked increases in supplies and labor, but there were few changes in refining practice.

Iron and Steel. The iron and steel industry in 1917 showed great prosperity and output, but few technical advances in metallurgy. Most of the changes in practice that resulted were due to commercial conditions and especially the shortage of certain raw materials. In regard to the various refractory substitutes, such as magnesite and chromite, there was a marked deficiency, and for the former, deposits in Washington and California were being mined to take the place of the material previously imported, while for chromite, only a few deposits were known to occur in the United States, so that the shortage of imports was seriously felt.

Chromium was being used as alloy for steel especially in the production of a stainless or rustless alloy, but the alloying element most used was tungsten, which during the year went to an extraordinary price. This, however, served to produce a domestic supply in the Rocky Mountains, while such substitutes as molybdenum, uranium, and ferrosilicon were being employed to replace tungsten. It was claimed that a half per cent of uranium which was being mined in Colorado for its radium content and for other purposes, would replace several per cent of tungsten in tool steel, but the exact merits of the steel so made were more or less in controversy. Ferrosilicon was used increasingly during the year and in part to replace magnesite, but this latter substance had become essential to the manufacture of good steel, so that about 300,000 tons of ferrosilicon were required for the annual American steel output. Manganese ore was being obtained almost exclusively from the tropics and especially from Brazil, but by 1917 deposits were developed in Virginia and adjoining counties of North Carolina, so that by the first of November, the United States production of manganese ore had reached 120,000 tons for the year and was increasing. The steel maker preferred the concentrated ferromanganese which contained about 80 per cent of manganese, and from 6 to 7 per cent of carbon, rather than ore known as spiegeleisen which contained from 20 to 25 per cent of manganese and 5 per cent of carbon.

Some metallurgists believed that the failure to utilize lower grade materials for alloyed steels was due to a spirit of conservatism, and lack of enterprise in the face of active industrial conditions. This, however, was one of the metallurgical discussions of the year. In the production of ferromanganese, the electric furnace had largely taken the place of the blast furnace, as it was more efficient, by preventing the loss of manganese in the form of a silicate, and at the same time cuts down the amount of carbon in the metal.

The Colorado Fuel and Iron Company was successful during the year in making low carbon steel with spiegeleisen using this latter material in place of high-grade ferromanganese. Their practice was to add two-thirds of the required amount of spiegel in the furnace a few minutes before the charge was to be tapped. In this way a large amount of the carbon in the spiegel was oxidized and the manganese was able to enter into combination without an excess of carbon. The remaining third of the charge of spiegel was added in the ladle.

The efficiency of the blast furnace was being increased during the year, and at a notable installation, namely, the Larimer stove at the Joliet works of the Illinois Steel Company, a blast temperature of 1350 degrees with a stack temperature of 150 degrees was being obtained, the stack loss being 3.2 per cent. The use of a preheater to obtain a high constant temperature, namely, of 1450 degrees, was another feature of the year, and an increase of 400 degrees was obtained for the production of ferromanganese.

The most striking development in the foundry was the commercial development of the Stoughton oil-burning cupola for melting pig iron with an efficiency much higher than that of coke, and a loss in the amount of sulphur in the iron on remelting. In order to resist the onslaughts of steel producers, the makers of chilled-iron and malleable iron were introducing important measures to improve the products and to extend their use. It was reported in one plant that converters were being used to blow out the silicon and lower the carbon of the metal, as was general in the duplex process of steel manufacture, and to finish the blown metal either in the air furnace or in the electric furnace. Chilled iron car wheels were being considered for increased use; however, they had not figured to the extent of steel wheels for many years. One of the new processes of the year was a machine for centrifugal pipe casting by the use of a revolving permanent mold.

In the steel industry outside of the electric furnace discussed in following paragraphs, there was little of novelty during 1917. The Lamberton mill which reverses without reversing was introduced into a number of American mills. The essential feature of this machine was a powerful rotating mechanism capable of turning the circular housing of the rolls through 180°, thus reversing the position of the top and bottom roll, also the direction of rotation relative to the ingot. The latter received a pass in the reverse direction after which the housings were rotated back to their original position and the next pass given. The aim was to avoid the necessity of reversing the direction and of rotation of the motor.

In a blooming mill of a new design, two sets of rolls stand alongside each other with their axes in the same vertical plane. There is what would be the middle roll in the three-high mill in each stand, but on one side there is a roll below and one above, while on the other side, one above and one below, the two sets of tables being set the diameter of one roll out of level with each other. The bloom, after being passed to one stand, is transferred sideways to the other stand, and after it is passed to that combination, is returned to the delivery rollers of the first stand, etc.

During the year, the discussion of rail composition and construction continued, and interest was manifested in a paper on the transverse fissures in rails by the engineer physicist of the Interstate Commerce Commission who had for years investigated this subject. This paper was one of considerable technical importance, and was extensively reprinted in the metallurgical and railway papers. An interesting development on the Pacific Coast, was the melting of steel scrap with oil fuel in open hearth furnaces, utilizing the supply of scrap which had accumulated in this region for about forty years.

Electro-Metallurgy. The electric steel industry in the United States and in fact in the world generally in 1917, exceeded in its development and progress the remarkable record for 1916. The United States in particular was most active in applying this form of metallurgy and in fact so many and so rapid were the installations that any accurate tabulation was considered hardly possible. On December 31, 1917, there were 233 electric steel furnaces of all types in the United States and 36 in Canada, as compared with 19 for the United States and 3 for Canada on July 1, 1913. On January 1, 1917, the steel industry throughout the world contained 471 electric furnaces, while at the end of the year the total was estimated at 733. On July 1, 1913, the total number of such installations throughout the world was 140.

In the United States, the Illinois Steel Company at South Chicago, Ill., in November, 1917, started up the largest electric steel plant of the kind in the world containing two 25-ton and two 15-ton Heroult furnaces with another 25-ton furnace in course of construction. Large electric steel plants with Heroult furnaces were added at the Anniston Steel Company, Anniston, Ala., with six 6-ton Heroult; the Hess Steel Corporation, Baltimore, Md., with six 6-ton furnaces; the Carpenter Steel Company, Reading, Pa., The Timkin Roller Bearing Company, Canton, Ohio, and the Armstrong Whitworth of Canada, Ltd., Longueil, Quebec, each with four 4-ton furnaces. The United Alloy Steel Corporation had a 15-ton and a 6-ton Heroult furnace.

The largest installation in point of number of furnaces to be erected in 1917 was that of the British Forgings, Ltd., at Toronto, Canada, which contained ten 6-ton Heroult furnaces.

A new English furnace which was constructed in the United States was the Greaves-Etchells, while another new design exclusively American was the Booth-Hall furnace installed at the plant of the Midland Electric Steel Company, Terre Haute, Ind. The Snyder furnace had 32 new installations in the United States, and three in Canada as against 19 in the United States and three in Canada in 1916. The Grönwall-Dixon had 11 new furnaces in the United States and one in Canada. The Moore electric furnace, also a new type, was installed in Wisconsin and at Richmond, Va.

In Germany and Luxemburg as well as in Austria-Hungary, there was a considerable increase in the number of electric furnaces for which the best available statistics are given in the accompanying table from the *Iron Age*:

TABLE OF ELECTRIC STEEL FURNACES, BY COUNTRIES OF THE WORLD, OPERATING OR CONTRACTED FOR ON DEC. 31, 1917,* WITH TOTALS FOR 1917, 1916, 1915, 1913, AND 1910

	Total Dec. 31, 1917	*Total Jan. 1, 1917*	*Total Jan. 1, 1916*	*Total Jan. 1, 1915*	*Total July 1, 1913*	*Total March, 1910*
Germany and Luxemburg	91	52	53	46	34	30
Austria-Hungary	31	18	18	18	10	10
Switzerland	4	4	4	3	2	2
Italy	40	29	22	22	20	12
France	50	29	21	17	13	23
Great Britain	131	88	46	16	16	7
Belgium	..	3	3	3	3	3
Russia	21	16	11	9	4	2
Sweden	50	40	23	18	6	5
Norway	12	9	6	2	3	..
Spain	2	2	2	1	1	..
Japan	4	2	1	1	1	..
South Africa	2	1	1	1	4	3
Australia	1	1	1	1	..	..
Chile	2	..	1	..	..	..
Denmark	2	1	..	..	..	..
Location not given	21	21	9	12	..	..
Total outside the U. S. and Canada	464	316	222	170	118	101
United States	233	136	73	41	19	10
Canada	36	19	8	2	8	3
Total in the U. S. and Canada	269	155	81	43	22	13
Grand total in the world	733	471	303	213	140	114

* Largely estimated.

Great Britain in its number of electric furnaces ranked second to the United States, and the various types were distributed as follows: 48, Heroult; 35, Greaves-Etchells; 27, Electro-Metals (Grönwall-Dixon in the United States); 7, Rennerfelt; 6, Snyder; 4, Stassano; 3, Stobie; 2, induction, and 1, Girod. Of these, 70 were in Sheffield, England, which centre contains the largest number of electric furnaces of any source of steel production in the world.

Electric steel furnaces were widely distributed all over the world and were responsible for about 4,000,000 tons per year product, of which the United States and Canada contributed about 1,800,000 tons. See CHEMISTRY, INDUSTRIAL; COPPER; GOLD; IRON AND STEEL; LEAD; etc.

METALS. See CHEMISTRY, INDUSTRIAL.

METEOROLOGY. The death roll of the year included the names of Professor Kristian Birkeland, of Christiania, distinguished for his investigations of the nature of the aurora borealis; and Dr. William Bullock Clark, professor of geology in Johns Hopkins University, and director of the State Weather Service of Maryland.

EXTENSION OF WEATHER BUREAU WORK. When the programme of meteorological observations by the U. S. Weather Bureau was put into effect in 1872, it was confined mainly to the daily forecast and warning service. To meet the great advances of meteorological science made during the decade ended in 1917, as well as the rapidly increasing demands of aviation, a committee of Central Office officials was appointed in November, 1916, to consider the observational work of the bureau, and to report on such revision or extension as seemed desirable. The committee presented its report, which was approved, to come into effect on January 1, 1918. Press of other important work was offered as the reason for not adopting the ideal programme, but the following additions to the programme as carried on were suggested as being well within the bounds of practicability: (1) the making of an observation of relative humidity and cloudiness at all principal stations at the uniform hour of noon, local mean time; (2) the compilation of wind direction and velocity from the automatic record sheets at selected stations; (3) the collection of statistics of hail, thunderstorms, and tornadoes in greater detail than at present.

THE COLD SPRING OF 1917. The spring of 1917 in the United States was remarkable for its coldness. The available data were discussed by Preston C. Day in a paper in the *Monthly Weather Review*, in which the mean temperature departures from the normal were clearly shown in a series of maps. The period of cold weather began about April 24, and lasted until about the middle of May in nearly every part of the country. Temperatures were almost continuously below the normal, the daily deficiencies ranging from about 3° F. near all the borders to 9° F. over the interior districts; at a few local points, the deficiency even reached as high as 12° F. After an interval of a week in which the temperatures were generally, though not materially, above the normal over the greater part of the country east of the Rocky Mountains, a second period of cold set in and continued practically without a break until about June 19, a period of four weeks. In almost every respect this second period exceeded the first. Mean temperatures over the whole of the interior ranged from 6° F. to 8° F. below the normal, while at times the deficiency was as much as 20° F.; only along the Gulf and Southern coast and at a few points in the far Northwest was the temperature above the normal. An examination of the records of the Weather Bureau since 1872 failed to disclose another instance in which the average temperature for the month of May was so universally below the normal. In spite of the continued cold, however, killing frosts were of comparatively rare occurrence. Over many parts of the country the precipitation was also below normal, barely amounting to a tenth of an inch over large areas.

The countries of the north and west of Europe also experienced extremely cold weather, averaging about 4° below the normal from the end of November, 1916, to the latter part of April, 1917, a period of nearly five months. The cold spell finally gave way to much warmer weather about the time the cold weather in the United States began, and the month of May was remarkable for unseasonably high temperatures.

SNOWFALL OF NEW ENGLAND. Professor Charles F. Brooks published in the *Monthly Weather Review* a study of the snowfall of New England. After reviewing some of the great historic snowfalls of New England, he pointed out that heavy snowstorms in this region occur under several distinct and well-marked combinations of weather conditions. If a cyclonic disturbance over the Great Lakes and another off the South Atlantic Coast combine south of New England, and move in a northeasterly direction, a strong cyclone is produced, and the cold northerly winds and the moist easterly winds together give rise to the requisite moisture and low temperature. Northeast snowstorms also arise when a single cyclone pushes up the coast against the southward circulation on the east side of an extensive interior anti-cyclone. Other favorable conditions for the occurrence of heavy snowfall are offered whenever, during a period of low temperature, a strong cyclone is passing immediately south of, or northward through, New England, while an anti-cyclone on the northeast or north is on its way.

Despite the small area of the region, there is great diversity in the amounts of snowfall registered in different parts of New England. Heavy snowfall on one side of a mountain range is accompanied by light snowfall on the other side, owing to loss of moisture in the passage of the crest. This makes the Champlain Valley a region of comparatively light snowfall, for it lies in the "snow shadow" of both the Adirondacks and the Green Mountains. The upper Connecticut Valley is a similar region. In the coastal region, it is generally cold enough for snowy ocean winds only in February, March, and April, and the belt of maximum precipitation is some distance from the coast, being further inland the more sharply the country rises. A series of maps based on observations from 178 stations for the period 1895 to 1916 was given showing the distribution for the six months from November to April for different years, and also for the whole period. The February averages are the highest. Only on Cape Cod does the average for that month fall below ten inches, while one small region in northwestern Massachusetts shows an average fall of more than thirty inches; for the White and Green Mountains and the greater part of Maine the average lies between twenty and thirty inches. Attention was drawn to the fact that New England is the focus for most of the cyclones which cross the United States, and as many of the strongest pass south of this region, or across its southeastern portion, this section of the country experiences from time to time extraordinary snowstorms which are one of the greatest characteristics of its climate.

Rainfall and Gunfire. The old question of the connection between rainfall and gunfire was examined again by M. Angot, the director of the French Meteorological Service. The excess of rainfall in Europe in 1915 and 1916 was attributed to the artillery fire of the contending armies, and was hailed by the champions of the theory as conclusive evidence of the soundness of their views. M. Angot made a careful comparison of the daily weather maps and the observed rainfall figures, but failed to find any support of the theory. In fact, as he pointed out, 1915 and 1916 fell into a series of wet years, which began with 1909 and balanced the dry series of 1898-1904, so that their excessive wetness could hardly be regarded as abnormal. Further evidence against the theory was found in the great spring offensive of 1917 which failed to interrupt the long-continued fine weather in which it occurred. English rainfall records also failed to show any indication of a distribution affected by the gunfire in northern France.

A Destructive Avalanche Wind. A striking instance of the force of the blast generated by an avalanche was reported from Juneau, Alaska. The wind occurred on January 26 as the result of a heavy snowslide into Gold Creek Gulch, near Juneau. Three cabins which stood opposite the bank where the slide occurred were demolished by the force of the blast, and their débris was carried 100 feet up the opposite slope.

METHODIST EPISCOPAL CHURCH. The total number in full membership in this denomination in 1917 was 3,843,304, as compared with 3,724,188 the year before, 439,985 probationers, as compared with 403,876; 30,667 church buildings as compared with 30,778; 18,841 ministers in full connection as compared with 18,882; 1679 on trial as compared with 1621; and 14,873 local preachers as compared with 15,239. The total membership, including probationers in 1917 was 4,283,289, as compared with 4,128,064 in 1916. The total number of Sunday schools in 1917 was 36,143, as compared with 36,121 in 1916. The number of officers and teachers in 1917 was 411,402, as compared with 408,244 in 1916, and the number of Sunday school pupils in 1917 was 4,606,700, as compared with 4,579,029 in 1916. The total membership of the Epworth League in 1917 was 1,140,917, as compared with 830,889 in 1916. The estimated value of church property in 1917 was $225,116,667, as compared with $217,646,570 in 1916; and of the parsonages $38,085,036, as compared with $36,174,636 in 1916. The average salary paid to pastors in 1917 was $1037.54.

The missionary activities of the denomination are conducted through the Board of Foreign Missions; the Board of Home Missions and Church Extension, the Women's Foreign Missionary Society; and the Women's Home Missionary Society. The mission conferences of the denomination are: Austria-Hungary, Bulgaria, Burma, France, Inhambane, Kiansi, North Africa, North Andes, Pacific Swedish, Porto Rico, Rhodesia, Southern Swedish, West Central Africa, and West China. Extensive missions are maintained on four continents, as follows: Asia: India, Burma, Malaysia, the Philippine Islands, Java, Borneo and Sumatra, China, Japan, and Korea; Africa: Liberia, Angola, Madeira Islands, Southern Congo, Portuguese East Africa, Rhodesia, Algeria, and Tunis; South America: Argentina, Paraguay, Uruguay, Bolivia, Chile, Peru, and Panama; Europe: the Board of Foreign Missions maintains mission organizations in Italy, France, Bulgaria, Austria-Hungary, and Russia, and makes grants in aid to the Methodist Episcopal conferences in Germany, Switzerland, Denmark, Norway, Sweden, and Finland. Thus in all, thirty-four different countries are benefited, and the gospel is preached in about twice that number of languages.

The total number of missionaries in 1917 was 1568, including 458 men and 471 women, wives, and single missionaries under the board, 497 single women under the Women's Foreign Missionary Society, and 142 other workers, mostly self-supporting missionaries in fields like South Africa. They were assisted by 11,110 native workers, representing an increase of 1688 in the native staff over last year. They care for an enrolled membership of 442,765, to which must be added the baptized children and unbaptized adherents, making a total community, according to the most recent advices to the board in New York City, of 673,657, with a new gain for the year of 12,351. The missionaries of the board are responsible for 7440 Sabbath schools, reporting 346,793 scholars. The total receipts of the missionary societies in 1917 were: Board of Foreign Missions, $1,940,304; Board of Home Missions and Church Extension, $1,319,762; the Women's Foreign Missionary Society, $1,775,758.90; Women's Home Missionary Society, $1,084,406.

Under the general charge of the Board of Education are maintained in the United States and abroad 420 educational institutions, including 42 colleges and universities, of which the most important are: De Pauw University, Indiana; Northwestern University, Illinois; University of Southern California; Ohio Wesleyan University; Boston University; and Wesleyan University. There are ten theological schools for white students and six for colored.

Besides the missionary and Sunday school organizations and the Board of Education there are: the Methodist Book Concern, through which the publications of the denomination are issued; the Epworth League, the association for the young people of the church; the Methodist Federation for Social Service: the Freed-Man's Aid Society; the Deaconess Work; and the Temperance Society.

METHODIST EPISCOPAL CHURCH, South. The larger number of Methodists in the Southern States are included in this denomination. According to the official returns in 1917, there were 7320 ministers: 5263 lay preachers; 2,123,785 church members and probationers; 16,868 Sunday schools; 147.155 officers and teachers; 1,679,163 Sunday school scholars; and 16.993 churches. The figures for ministers, churches, and members are for 1917, the rest of the figures for 1916. There were on January 1, 1917, 7517 traveling preachers, not including supplies, 7440 last year, a gain of 77 over last year; 5313 local preachers including supplies, a gain of 50; 2,152,838 members including local preachers, a gain of 50,773; 150,134 Sunday school officers and teachers, a gain of 2979; 1,775,668 Sunday school scholars, a gain of 78,505; 135,278 Epworth League members, a gain of 2215; 17,359 churches, etc., a gain of 127; 5538 parsonages, a gain of 120; 19,699 societies, a decrease of 10; value of church property $60,908,581, an increase of $1,858,308; value of parsonages, $11,754,132, an increase of $333,836.

The work of the denomination extends over territory in which there are 330 districts and fifty conferences, including the missionary conferences of Brazil, Central Mexico, China, Cuba, German Mission, Korea, Mexican Border Mission, and South Brazil.

METHODISTS, Canadian. The Methodist Church in Canada was formed in 1883 by the Union of the Canadian branches of the Wesleyan Methodist Church, the Methodist Episcopal Church, the Primitive Methodist Church, the Methodist New Connection Church, and the Bible Christian Church. The territory covered by the operations of the church included the Dominion of Canada, Newfoundland, Bermuda, and Mission Fields in China and Japan. For administrative purposes there are twelve conferences: Toronto, London, Hamilton, Bay of Quinte, Montreal, Nova Scotia, New Brunswick and Prince Edward Island, Newfoundland, Manitoba, Saskatchewan, Alberta, and British Columbia.

In 1917 there was a total membership of 2860 ministers; 378,802 church members and probationers; 3818 Sunday schools; 42,590 officers and teachers; 415,337 Sunday school scholars; 3782 churches, etc. There were 2327 Young People's Societies, a decrease of 63. The membership of these societies is 93,530. Under the educational control of the church are 17 colleges and universities, of which the most important are: Victorian University, Toronto; Mt. Allison University, Sackville, N. B.; Wesleyan Theological College, Montreal; Wesley College, Winnipeg. The total value of all buildings and equipment is $5,729,394, and total value of endowments is $1,470,997. The principal officers of the church in 1917 were: Samuel Dwight Chown, general superintendent; Albert Carman (q.v.), general superintendent emeritus; T. A. Moore, secretary of the General Conference; book steward, Wm. Briggs; W. B. Creighton, editor of the *Christian Guardian;* A. C. Crews, editor of Sunday School Publications; David W. Johnson, editor of the *Wesleyan.*

METHODISTS, Colored. In 1917, there were 3072 ministers; 2786 lay preachers; 240,798 church members and probationers; 4007 Sunday schools; 7098 teachers; 79,876 Sunday school scholars; and 3196 churches. The Colored Methodist Episcopal Church is an offshoot of the Methodist Episcopal Church, South. The African Methodist Episcopal Church, which was formed from the Methodist Episcopal Church in 1815, had in 1917: 5000 ministers; 6302 lay preachers; 620,000 church members and probationers; 5695 Sunday schools; 39,310 officers and teachers; 310,000 Sunday school scholars; 6000 churches, etc. The African Methodist Episcopal Zion Church, organized in 1821, had, in 1917, 3552 ministers; 649 lay preachers; 568,608 church members and probationers; 2070 Sunday schools; 14,404 officers and teachers; 118,159 Sunday school scholars; 3180 churches, etc. The Union American Methodist Episcopal Church (Colored) had, in 1917, 170 ministers; 19,000 church members and probationers; 78 Sunday schools; 481 officers and teachers; 3372 Sunday school scholars; 212 churches. The Union American Methodist Episcopal Church (Colored) had, in 1917, 170 ministers; 19,000 church members and probationers; 78 Sunday schools; 481 officers and teachers; 3372 Sunday school scholars; 212 churches. The African Union Methodist Protestant Church (Colored) had, in 1917, 200 ministers; 750 lay preachers; 4000 church members and probationers; 66 Sunday schools; 441 officers and teachers; 5266 Sunday school scholars; 125 churches. The Reformed Zion Union Apostolic Church (Colored) had, in 1917, 33 ministers; 3059 church members and probationers; 36 Sunday schools; 212 officers and teachers; 1508 Sunday school scholars; and 45 churches. The Reformed Methodist Union Episcopal Church (Colored) in 1917, had 72 ministers; 4397 church members and probationers; and 58 churches.

METHODISTS, Wesleyan. This is the largest branch of the denomination in Great Britain and Ireland. In 1917 it had 2618 ministers: 19,012 lay preachers; 491,862 church members and probationers; 7428 Sunday schools; 124.428 officers and teachers; 872,674 Sunday school scholars; 8515 churches, etc., with a seating capacity of 2,383,704. The corresponding figures for Ireland are 251 ministers; 637 lay preachers; 27,429 church members and probationers; 340 Sunday schools; 2297 officers and teachers; 23,857 Sunday school scholars; 546 churches. The returns for Canadian Methodism will be found in a separate title. In Foreign Missions the Wesleyan Methodists in 1917 had 727 ministers; 6386 lay preachers; 1.193,360 church members and probationers; 2227 Sunday schools; 9812 officers and teachers; 138,389 Sunday school scholars; 3612 churches. In the French Conference of Wesleyan Methodists there were in 1917 29 ministers; 68 lay preachers; 1586 church members and probationers; 35 Sunday schools; 124 officers and teachers; 1436 Sunday school scholars; 122 churches. In the South African Conference the Wesleyan Methodists in 1917 had 282 ministers; 4407 lay preachers; 139.161 church members and probationers; 890 Sunday schools; 3133 officers and teachers; 42,223 Sunday school scholars; 4160 churches, etc.

Primitive Methodists. Ministers, in 1917, 1157; lay preachers, 14,976; church members and probationers, 205,217; Sunday schools, 4121; officers and teachers, 56,669; Sunday school scholars, 428.404; churches, etc., 4841.

United Methodist Church. Ministers in 1917, 784; lay preachers, 5917; church members and probationers, 182.624; Sunday schools, 2223; officers and teachers, 38,957; Sunday school scholars, 278,245; churches, etc., 3036.

Wesleyan Reform Union. Ministers in 1917, 26; lay preachers, 491; church members and probationers, 8770; Sunday schools, 201; officers and teachers, 2572; Sunday school scholars, 22,554; churches, etc., 215.

Independent Methodist Churches. Ministers, in 1917, 391; church members and probationers, 9298; Sunday schools, 158; officers and teachers, 3036; Sunday school scholars, 26,157; churches, etc., 146.

Australasian Methodist Church. Ministers in 1917, 985; lay preachers, 8634; church members and probationers, 149,878; Sunday schools, 3849; officers and teachers, 21,964; Sunday school scholars, 203,365; churches, etc., 5147.

New Zealand Methodist Church. Ministers in 1917, 198; lay preachers, 946; church members and probationers, 24,730; Sunday schools, 407; officers and teachers, 3276; Sunday school scholars, 29,448; churches, etc., 460.

Japan Methodist Church. Ministers, 241; church members and probationers, 15,364; Sunday schools, 340; Sunday school scholars (also officers and teachers), 28,438; churches, 245.

British Methodists. The Methodist Publishing House of London published the following statistics of British Methodism in 1916. They contained not only the returns for Great Britain and Ireland, but for Methodist churches and missions in foreign fields. The returns for Canadian Methodism will be found in a separate article. British Methodists at home and abroad had in 1916 a total of 10,356 ministers; 64,469 lay preachers; 1,804,890 church members and probationers; 25,803 Sunday schools; 308,731 Sunday school officers and teachers; 2,522,793 Sunday school scholars; and 25,961 churches, etc., exclusive of Great Britain.

Methodism is also represented in several European countries by Conferences and Missions affiliated to the Methodist Episcopal Church of America. The latest returns available are: Austria-Hungary, 955 members; Bulgaria, 691; Denmark, 4053; Finland, 1579; France, 597; Italy, 4132; North Germany, 14,760; Norway, 6261; Russia Mission, 452; South Germany, 14,005; Sweden, 16,451; Switzerland, 10,049.

METROPOLITAN OPERA HOUSE. See Music, *Opera*.

MEXICO. A federal republic situated between the United States and Central America. The capital city is Mexico, in the Federal District.

Area and Population. The republic consists of 27 states, three territories, and the Federal District. The area is stated at 1,987,201 square kilometres, including islands of 4042 square kilometres not attached to any state or territory. This area, equivalent to 767,258 square miles, is 25.35 per cent of the area of the United States. The census of October 27, 1910, returned a population of 15,160,369, as compared with 13,607,259 in 1900. In 1912 the population was estimated at 15,501,684. About one-fifth of the people are white, over two-fifths mestizo, and nearly two-fifths Indian. In 1910, males numbered 7,504,471, and females 7,655,898; Spanish-speaking persons, 13,143,372 (most of the remainder speaking Indian languages); Roman Catholics, 15,033,176; persons of foreign birth, 116,527 (including 29,541 of Spanish birth, 21,434 Guatemalan, 20,639 American, and 13,203 Chinese). Population of the larger cities at the 1910 census: Mexico, 471,066; Guadalajara, 119,468; Puebla, 96,121; Monterrey, 78,528; San Luis Potosí, 68,022; Mérida, 62,447; León, 57,722; Veracruz, 48,633; Aguascalientes, 45,198. For other details, including area and population by states, see the 1916 Year Book.

Industries and Commerce. In proportion to the country's capabilities, agricultural production is small. The leading crops include corn, cotton, henequen, wheat, sugar-cane, coffee, beans, potatoes, chick peas, and tobacco. An abundant corn crop was reported for 1917. In that year the national government instructed the governors of the states to effect as large an increase as possible of the area under cultivation and to allot lands not cultivated by their owners to applicants who would produce crops. Cattle raising attained considerable importance, but live stock were seriously depleted in the course of the recent civil wars. Mexico has exceptionally rich mineral resources, which have attracted large amounts of foreign capital. The leading metal produced is silver, followed by gold and copper; there is some production of lead, antimony, and zinc. In recent years a large petroleum industry has developed in the Tampico region and the Isthmus of Tehuantepec. The reported production in 1915 was 32,910,508 barrels; in 1916, 39,917,402 barrels. The principal Mexican manufactures are cotton goods, tobacco, sugar, and spirits.

In the fiscal year 1912-13, imports and exports were valued at $97,886,169 and $150,202,808 respectively. Classified exports in that year: mineral products, $94,824,305; vegetable products, $42,971,477; animal products, $9,918,916; manufactures, $1,672,633; miscellaneous, $815,477. Official statistics are not available for later years. Estimates for the calendar year 1915 place total import values at $85,000,000 and total export values at $156,000,000; 1916, $90,000,000 and $170,000,000. Estimated imports from and exports to the United States in 1916, $60,000,000 and $110,000,000; United Kingdom, $9,000,000 and $32,000,000; France, $5,500,000 and $3,500,000; Spain, $3,000,000 and $1,000,000.

Communications. The length of railways in operation on September 30, 1913, was 15,782 miles. In 1917 the Tehuantepec National Railway, extending from Puerto, Mexico, to Salina Cruz, Mexico, a distance of 188 miles, which had been operated under a 50-year contract from July 1, 1903, between the Federal government of Mexico and the firm of S. Pearson and Son, Ltd., of London, figured in a discussion between the Mexican government and the contractors, who were also managing partners in charge of the operation of the enterprise. An agreement negotiated during the year contemplates the acquiring of the road by the government and also the docks and harbors works under construction at Puerto Mexico and the cancellation of the original contract. The secretary of communications and public works authorized the manager of the Mexican Railway, in compliance with the petition made by the company, to put into effect, beginning on November 1, 1917, a 25 per cent increase in the passenger rates. The proceeds of this increase, as in the case of the one granted to the Mexican Electric Tramway Company, were designed for the benefit of the Federal treasury.

The railways of Mexico during 1917, according to reports of observers, were in bad shape, and facilities were greatly curtailed. The Vera Cruz and Pacific was not in operation and traffic for the Isthmus of Tehuantepec was forced to go by boat from Vera Cruz to Puerto Mexico. The Interoceanic was closed down and the Mexican Central line from San Luis to Tampico was abandoned and could not be operated even by a military train. From Mexico

City to Queretaro, ties and rails had entirely disappeared and only the right-of-way was said to remain. This line paralleled the Mexican National Railway. From Vera Cruz to Cordova, the line was subject to attacks by raiding bands, and was only operated in the daytime, each train being preceded by a guard train. Throughout the country, the rails in various sections had been removed and frequently military guards were required. The line from Monterrey to Tampico was kept open most of the time, but the trains were heavily guarded, as it was subject to raids. Over this line, the fuel oil for the central railways was hauled. Certain large firms in Mexico were carrying on business by owning their own trains and locomotives and cars, and using their own employees, but even these were subject to attack from bandits.

The Federal telegraph line on September 30, 1913, was 22,452 miles, with 58,727 miles of wire and 516 offices; other telegraph wire, 5211 miles. Wireless telegraphy had been installed, and several new stations were constructed in 1917. Post offices in 1913, 2911.

FINANCE. The nominal standard of value is gold, with a peso worth 49.846 cents as monetary unit. The common unit of value has been the silver peso; with the rise in the price of silver, the value of the silver peso advanced sharply in 1917, being about 77 cents on October 1. But metallic currency has been virtually withdrawn from circulation as a result of civil war, while enormous quantities of inconvertible paper money have been issued. For the fiscal year 1915, the estimated revenue was 145,957,000 peso silver (customs, 57,875,000; internal taxes, 57,761,000); estimated expenditure, 152,204,898 pesos silver (war and marine, 35,165,428; finance, 41,178,776). Public debt as reported in 1917, 491,806,055 pesos gold, including arrears of interest amounting to 68,159,450 pesos gold.

GOVERNMENT. A new constitution came into force May 1, 1917. On that date Gen. Venustiano Carranza was inaugurated president. His term of office is four years and he is not eligible for reëlection. Senators and deputies forming the Federal Congress, as well as the president, were elected March 11, 1917. On October 19, 1915, Gen. Carranza, leader of the Constitutionalists, was recognized by the American government as chief of the executive power of the de facto government of Mexico. For the new constitution, see below.

HISTORY. The constitutional convention, which opened on December 1, 1916, succeeded in drafting the revised constitution within two months. It was signed on January 31, 1917, and promulgated on February 5. It vested the supreme power in the president, who could hold office only for a single term, and in a congress of two houses, elected by universal suffrage, male and female. Congress was to choose the successor to the president, if he died in office, for there was no vice-presidency. Another feature of the constitution was a series of measures providing for the democratization of the judiciary. It introduced the principle of free justice, without court costs, and to the end of securing social justice created a radical labor code comprising: Minimum wage, to be fixed by the several states; eight-hour day and six-day week; compulsory profit-sharing; national public health department; free employment bureau. Rigid measures against trusts were another feature. In the above respects the constitution was in theory at least among the most advanced democratic instruments in existence. On the side of land reform which had been one of the leading purposes proclaimed by the revolution, it did not go so far as had been expected. The revolutionary programme for the emancipation of the peon from the landed aristocracy was not realized, but measures of amelioration were adopted, such as the restitution of communal and tribal lands to the villagers and Indians from whom they had been taken. As to the church, the following severe measures were taken: Expropriation of the religious orders; confiscation to the government of churches, schools, and hospitals owned by the church; exclusion of American Protestant missionaries; requirement that the clergy be Mexican-born, thus exiling the Spanish priests; prohibition of the clergy from teaching in the public schools, or in the lower grades of private schools; investment in the government of larger powers of interference with church matters. The provisions which drew the most attention from abroad, and aroused protests, were those for regulating foreign capital. The government was empowered to expel any foreigner whose activities were considered dangerous or embarrassing, and new safeguards were taken against the concession of great oil and mining properties to foreigners, all natural resources being declared public property. Foreign capitalists also objected to the labor laws above mentioned. They had complained of Carranza's previous decree that they should henceforth have only the same rights as Mexicans, and they protested also against the increase of the tax on crude oil to 10 per cent *ad valorem*. The latter subject was discussed in June.

The election which was held on March 11 and brought out an unusually large vote resulted in the choice of Venustiano Carranzo as president and in giving his supporters, the Constitutionalist Liberals, a majority in the new congress. The latter body assembled on April 15, and, as in the United States Congress, there was one woman in the House of Representatives. Carranza was inaugurated on May 1. See LABOR LEGISLATION; UNITED STATES, *Foreign Relations;* UNITED STATES AND THE WAR.

MIAMI CONSERVANCY. See DRAINAGE; FLOOD PROTECTION.

MICHIGAN. POPULATION. The population of the State in 1910 was 2,810,173, and on July 1, 1917, it was estimated to be 3,094,266.

AGRICULTURE. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	1,750,000	37,625,000	$68,478,000
	1916	1,650,000	45,375,000	48,106,000
Wheat ..	1917	845,000	15,210,000	31,028,000
	1916	800,000	13,280,000	22,178,000
Oats	1917	1,550,000	56,575,000	36,208,000
	1916	1,423,000	42,690,000	22,626,000
Potatoes .	1917	378,000	35,910,000	37,706,000
	1916	320,000	15,360,000	24,576,000
Hay	1917	2,558,000	*a* 3,887,000	65,996,000
	1916	2,750,000	4,675,000	46,750,000

a Tons.

MINERAL PRODUCTION. The mines of the State produced in 1916, 273,692,525 pounds of copper, valued at $67,328,361, compared with 265,283,378 pounds of copper, valued at $46,424,591 in 1915. In connection with this, there were produced in 1916 716,640 fine ounces of silver, valued at $471,549, compared with 585,933 fine ounces valued at $297,068 in 1915. The total value in copper and silver in 1916 was $67,799,910. This was an increase of $21,078,251 in value over the production in 1915. The average price of copper in 1916 was $0.246 per pound compared with $0.175 in 1915. The smelter production or the output of refined copper in 1916 was 269,794,531 pounds compared with 238,956,410 in 1915. The entire output of the copper and silver is from the Keweenaw district.

The coal production in the State in 1915 was 1,156,138 short tons, valued at $2,372,797, compared with 1,180,360 short tons, valued at $2,653,182 in 1916. The average price per ton in 1916 was $2.25, twenty cents greater than in 1915. There were employed in the coal mines of the State 2535 men in 1916, as compared with 2569 in 1915.

Michigan ranks second in the production of iron ore, being surpassed only by Minnesota. The total production in 1915 was 12,514,516 gross tons, compared with a production in 1916 of 18,071,016 tons. There were shipped from the mines of the State in 1915, 13,664,437 tons, valued at $28,218,627, compared with 18,995,797 tons, valued at $49,054,340 in 1916, an increase in 1916 in quantity of 39 per cent, and of 74 per cent in value.

TRANSPORTATION. The total railway mileage of single track in the State on June 30, 1914, the latest for which statistics are available, was 8898. There has been practically no construction since this date.

FINANCE. According to the report of the State treasurer on June 30, 1917, there was a balance on hand on July 1, 1916, of $12,578,230. The receipts for the year were $20,061,320, and the disbursements were $20,819,170, leaving a balance on hand on July 1, 1917, of $11,820,339.

EDUCATION. The total school population of the State in 1916 was 866,570. The total enrollment in the public schools was 620,861; total number of female teachers, 17,998; total number of male teachers, 2981. The average monthly salary of teachers was $66.90. The total expenditure for school purposes was $2,469,811.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the Pontiac State Hospital, the Kalamazoo State Hospital, the Traverse State Hospital, the Newbury State Hospital, the Ionia State Hospital, the State Psychopathic Hospital, the Michigan Colony and Farm for Epileptics at Wahjamega, the Michigan State Prison at Jackson, the State Hospital of Corrections and Branch Prison at Marquette, the Michigan Reformatory at Ionia, the Industrial School for Boys at Lansing, the State Industrial School for Girls at Coldwater, the Michigan School for the Blind at Lansing, the Michigan State School for the Employment of the Blind at Saginaw, the Michigan School for the Deaf at Flint, the Michigan Soldiers' Home at Grand Rapids, the Michigan State Sanatorium for Tuberculosis at Howell.

POLITICS AND GOVERNMENT. The regular biennial session of the legislature was held during the first four months of 1917. The legislature voted to submit to the electors of the State on election day, next November, an amendment to the State Constitution for equal suffrage for women. This will be the third submission of a woman suffrage amendment in Michigan in six years. Submitted in November, 1912, it was rejected by a majority of 750. Resubmitted in April following, it was rejected by a majority of 96,144. The legislature of 1917 not only voted to resubmit the amendment again in 1918, but enacted a statute to give women the right to vote for presidential electors. This was as far as the legislature could go, until the constitution is amended. An amendment to the constitution for State-wide prohibition having been adopted in November, 1916, the legislative session of 1917 declared by statute that when the amendment goes into effect on May 1, 1918, it shall be unlawful to have, or to bring into the State, for beverage purposes, intoxicants no matter how small the quantity. The use of alcoholic liquids will then be permissible for fine purposes only: medical, mechanical, chemical, scientific, and sacramental.

The legislature being in session when war was declared on Germany in April, authorized a $5,000,000 war loan for carrying on recruiting service, for caring for dependents of enlisted men, for an insurance or beneficiary fund for soldiers or their dependents, for organizing and equipping home defense units, for general auxiliary work, and for such other purposes as may be deemed necessary for the purpose of State and national defense.

The Michigan National Guard units that were taken into the national army for the war comprised: One infantry brigade of three regiments; one cavalry squadron (four troops); one battalion of artillery; three companies of engineers; two signal corps companies; one field hospital and ambulance company; one medical unit; one veterinary unit.

Michigan's two naval reserve brigades also were taken into the navy for the war. The reserve training ship, *Don Juan de Austria*, stationed at Detroit, being one of the Spanish ships Admiral Dewey's squadron sunk in the battle of Manila Bay, May, 1898, and raised after the war, was sent to Atlantic waters early in the summer for duty. She is manned chiefly by Michigan reserves. The total number of Michigan eligibles who registered under the Conscription Act passed by Congress last summer was 295,158. Michigan's quota under the first call for regular army recruits directly after the declaration of war, was 5622. She was the ninth State to fill her quota under this call.

Michigan's subscription to the Red Cross War Fund was $4,070,000.

At the State election in April, 1917, all the candidates on the Republican State ticket were elected by pluralities that averaged 120,000. The vote for the Republican candidates ranged from 236,373 to 241,773. The vote for the Democratic candidates ranged from 116,240 to 121,797. The average vote for the candidates on the Socialist ticket was 8700.

On December 22, 1917, there were convicted and sentenced in the United States District Court at Detroit, five Germans on indictments for setting on foot in Michigan a military enterprise against Canada while the United States was still at peace with Germany. The master mind of the group was Albert Kaltschmidt, a native of Germany who had been a resident of the United States for seventeen years and who at the time of his arrest was engaged in the salt manufacturing business at Marine City, Mich., within half a mile of the international boundary line. Kaltschmidt was convicted on counts of attempting to injure or destroy with explosives the Welland Canal, the Grand Trunk Railways Tunnel under the St. Clair River and which connects the United States with Canada, a bridge of the Canadian Pacific Railroad at Nipigon, Canada, the armories at Windsor, Canada, directly opposite Detroit, a factory on the Canadian side opposite Detroit that was making clothing for the Canadian soldiers, and a factory at Detroit that was making war munitions for the British Government. He was sentenced to four years' imprisonment in the Federal prison at Fort Leavenworth, and fined $20,000.

His accomplices, convicted and sentenced with him, were two men and their wives. Fritz Neef received a sentence of two years and a fine of $10,000, and Mrs. Neef received one year and $10,000 fine. Carl Schmidt received one year and $10,000 fine, and Mrs. Schmidt received two years and $10,000 fine. Frank Respa, father of Mrs. Schmidt and seventy years old, was acquitted but was ordered to be interned until the war is over.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below.

Municipalities are authorized to seize food and fuel found within their limits and resell them to the public. Owners of the food are to be compensated. Provision is made for an investigation as to the desirability of a budget system in the adminitstration of the State finances. The presidential primary act which had been hitherto enforced was repealed. Laws relating to labor were amended in important details. Provision was made for the protection of employees of railroad companies against arbitrary discipline or discharge. Laws relating to property were amended. Provision was made that whenever any leased building is destroyed or so injured as to be untenantable, the lessee or occupant may, in the absence of any expressed written agreement to the contrary, or if the destruction or injury was due to no fault of his, surrender possession without liability for subsequent rent. Laws relating to insurance were amended. A general housing code was adopted. Several important measures affecting the solicitation of funds by the charitable organizations were passed. The disbursing, as well as the solicitation, of gifts was regulated. This act does not apply to religious purposes. Provision was made for the establishment of county hospitals for the treatment of tuberculosis.

STATE OFFICERS. Governor, Albert E. Sleeper, Rep.; Lieutenant-Governor, Lauren D. Dickinson, Rep.; Secretary of State, Coleman C. Vaughan, Rep.; Treasurer, Samuel Odell, Rep.; Auditor, Oramel B. Fuller; Adjutant-General, John S. Bersey, appointed by State Military Board; Attorney-General, Alexander J. Groesbeck, Rep.; Superintendent of Public Instruction, Fred L. Keeler, Rep.; Commissioner of Insurance, Frank H. Ellsworth, Rep.

JUDICIARY. Supreme Court: Chief Justice, Franz C. Kuhn; Associate Justices, John W. Stone, Russell C. Ostrander, John E. Bird, Joseph B. Moore, Joseph H. Steere, Grant Fellows, Flavius L. Brooke; Clerk, Jay Mertz.

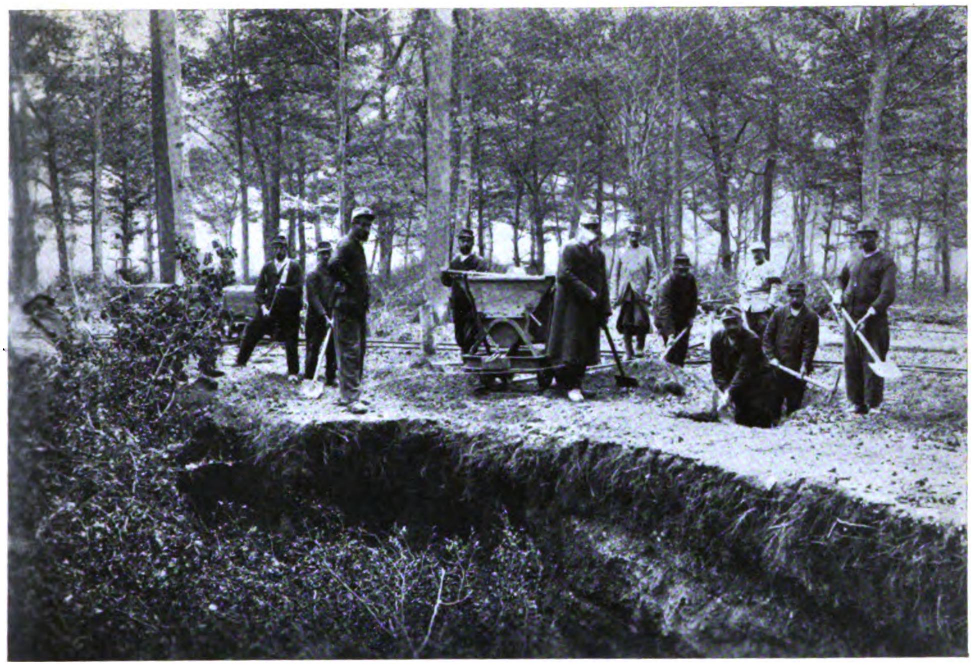
MICHIGAN, UNIVERSITY OF. A co-educational State institution of learning located at Ann Arbor, Mich. In the fall of 1917 there were 6434 students and 414 members of the faculty, not including 32 non-resident instructors, 134 demonstrators and assistants, 21 major administrative officials, or library or hospital staffs or administrative assistants. Volumes in the library numbered 383,972. During the year George E. Myers was appointed professor of industrial education, and a department of military science was installed under the direction of First Lieut. George C. Mullen, U. S. A., retired, as professor of military science. Between 60 and 70 members of the faculty and administrative staff were in government service and attendance was reduced in 1917 by about 1700 because of the war. About 2500 students, alumni, and faculty members were in government service at the end of the year. Productive funds in 1917 amounted to $1,044,840 and the income therefrom to $66,181. The principal gifts were from former Regent Levi L. Barbour of Detroit of $100,000 for a women's residence hall, and $100,000 for the establishment of scholarships for Oriental girls, the latter made in the belief that the influence of women in Oriental countries is rapidly growing and that in future years international understanding between the Orient and the Occident can be greatly improved through the influences of Oriental women who have training in America. The university was founded in 1837. President, Harry B. Hutchins, LL.D.

MICKLE, WILLIAM JULIUS. An eminent authority on general paralysis of the insane, who was born in Guelph, Canada, seventy years ago and who died on November 14, 1917. He graduated from the University of Toronto and then went to England, where he was made a Fellow of the Royal College of Surgeons of London, and a lecturer at London University and Middlesex College. He wrote an important book on the paralysis of the insane, which has long been considered an authority on that subject. He was also considered an authority on brain and nervous disorders. He was an associate editor of the publication, *Brain*, and contributed articles to *The Journal of Mental Science*.

MID-SCOTLAND CANAL. See CANALS.

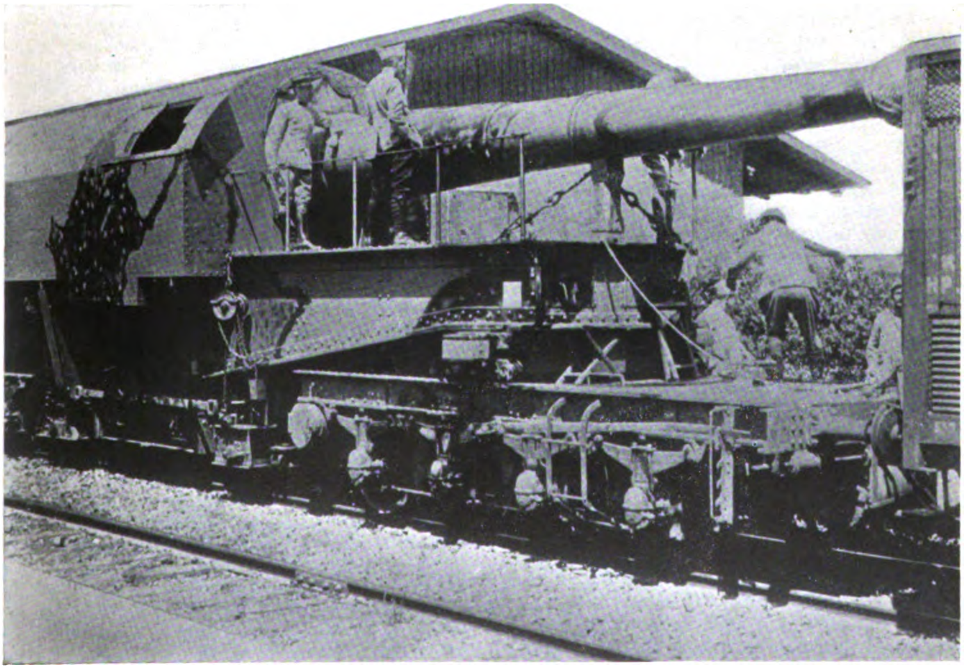
MILITARY ACADEMY, UNITED STATES. See UNITED STATES MILITARY ACADEMY.

MILITARY PROGRESS. The great struggle which was being waged in Europe naturally afforded application of the latest developments in the military art. The intensity of the conflict and the training and experience of the veteran combatants indicated that every meritorious idea would be utilized to the utmost and that those without merit would receive slight attention. In its broadest aspects modern warfare, as carried on in Europe, exhibited in 1917 but little change. The absolute necessity of the utilization of all the resources of a belligerent country in the conduct of the war had become even more evident than formerly. In the theatre of war itself the outstanding features still remained the indispensability of aircraft and heavy artillery, and the extreme importance of machine guns in both attack and defense. Though the fundamentals had not been altered in any essential degree, there had been many



Photograph from Jacques Boyer, Paris

CONSTRUCTING A FRENCH NARROW-GAUGE RAILWAY AT THE FRONT



Photograph by Jacques Boyer, Paris

LARGE FRENCH GUN ON RAILWAY MOUNT

details of their application which were of sufficient importance to merit attention.

The siege on a tremendous scale, now known as trench warfare, resulted from the use of great masses of troops, of the airplane, and of heavy artillery. The first two of these factors had been looked for in any future European war, but the employment of heavy guns in the field was a surprise to every one except the Central Powers. As soon as the trench lines had been established all the belligerents began to add to their artillery concentrations as rapidly as possible, devoting particular attention to an increase in the proportion of guns of large calibre. Advices received late in 1917 stated that the Germans had established a ratio of five to six between the numbers of their heavy guns and field pieces. The proportion in the armies of France and Great Britain was equally as great.

The necessity for the munitionment of artillery on so enormous a scale utterly disturbed the calculated relations between civilian and military needs. The result, taken in conjunction with other requirements of the troops at the front, has been to transform the civilian population behind the lines into a multitude of workers supplying the army. At the same time the available number of workmen was continuously reduced by the unavoidable recruiting for the armies at an unexpectedly rapid rate. The lengthy process of siege warfare, multiplied by its severity, necessitated the relief of units from action, their reorganization, and their replacement at a rate never before dreamed of.

Artillery and Ammunition. The necessity for the production of artillery and ammunition really developed into an industrial combat between Germany and the Western Allies. In spite of Germany's initial advantage in foreseeing the need for heavy field pieces and the fact that she controlled the important coal and iron regions of France and Belgium, she soon fell behind in the race. It was evident in 1916 that the Entente Powers possessed the advantage in artillery. The preponderance in their favor was even more marked in 1917. As an indication of the increase that had taken place in the production of munitions the following figures are cited. Comparing the French output in the early part of 1917 to the rate at the beginning of the war the production of 75 mm. field pieces had increased thirty times, of projectiles for that piece forty times, of large calibre projectiles ninety times, and of machine guns one hundred and seventy times. The figures for Great Britain were even more remarkable. The relative outputs of British munitions in June, 1915, and the first part of 1917 were: heavy howitzers, 1 to 323; field howitzers, 1 to 46; medium calibre guns, 1 to 66; smaller guns, of which the manufacture had been curtailed because the supply was too great, 1 to 12. The output in a single day of shells for heavy guns, and in a week of shells for field howitzers and three-inch guns equaled the production of these shells during the whole first year of the war. At the time in question there were 4623 Government-controlled munition plants in Great Britain with 2,225,000 employees. The maximum desirable point in gun and shell production had then been reached and there has since been a gradual return of plants to domestic manufacture and export.

Experience has demonstrated that the initiative in modern war rests with the side which possesses the strongest artillery. Hence the great importance which attached to that arm of the service, as there was no reason to believe that there had been a change in the experience of the ages that ultimate victory must fall to the army which retains and uses the initiative. It was the fact that they were opposed by an overpowering weight of artillery rather than that they were outnumbered that forced the Germans to assume the defensive on the Western Front during 1917.

Aëronautics. The use of aircraft is the factor which has made possible the employment of artillery on the immense scale with which we are now so familiar. In fact, the whole fabric of modern warfare hinges upon the airplane. Mastery of the air was believed to have a deciding influence on the outcome of the war. The advantage in this respect had alternated between the opposing armies on the Western Front, but remained for most of the year 1917 in the hands of the Allies. Military aëronautical development had proceeded along the different lines of reconnaissance and photography, artillery observation, bombing or raiding, and combat planes. The tendency, particularly as regards raiding machines, had been to increase the size of the airplane. The British Handley-Page biplane had a top wing span of ninety-eight feet and was capable of carrying twenty-one passengers or a useful load of equal weight.

The German answer to this machine was the Gotha biplane of seventy-eight feet span, the chief military feature of which was the machine gun tunnel eliminating the so-called "blind spot" under the tail. An enemy is perfectly safe from the machine guns of most airplanes if he can secure a position in line with and a little below its rear elements. The designers of the new Gotha met this difficulty by vaulting the fuselage below like a tunnel, along which a machine gun was trained to meet a "tail attack." Italy at the end of 1917 led in this type of machine with the giant Caproni triplane, which carried a crew of three men, three shell guns, 7500 pounds of bombs and fuel for six hours. The Zeppelin failed to add to its laurels during the year. Only one Zeppelin raid of consequence was made upon England. The resulting material damage was very slight and four of the seven raiders were brought down. Despite the fact that the Zeppelin remains one of the failures of the war the Italians brought forth during the year a dirigible which they believed would prove of more value. The Forlanini was of the rigid type, and was capable of remaining in the air for forty hours, covering during this time a distance of 2000 miles. It could rise to a height of 13,000 feet with a useful load of 6000 pounds, and to 20,000 feet without load, as compared with the Zeppelin's maximum of 12,000 feet. Its speed in attaining these elevations was practically as great as that of the best airplane climbers.

A notable feature of all work in the air during the year was the increased height at which operations were conducted. It was not uncommon for airplanes to meet at elevations above 18,000 feet. Photography from aircraft had become a recognized and necessary adjunct of trench warfare. The production of maps based upon aërial photographs was a matter of routine procedure and most accurate results were obtained. Comparison of recent maps of the same section made by the opposing armies showed them to be identical in all essential features, though in each case the enemy's positions had been plotted from airplane photographs. The captive balloon was still recognized as necessary for certain services in which it could not be replaced by the airplane or the dirigible. The elongated form of captive balloon had entirely supplanted the spherical type because of the greater ability of the former to withstand strong winds. All balloons were equipped with parachutes for the escape of the observers in case of sudden attack by airplanes. See AËRONAUTICS.

MACHINE GUNS. The use of the machine gun had been developed to such an extent as to make it count practically as a new weapon. In fact, the year saw the formation of a Machine Gun Corps in the British army. One machine gun properly handled was considered to be the equivalent of one hundred men armed with rifles. The great value of the machine gun lay in the rapidity of its fire, the accuracy of its aim, and the shape of its sheaf of bullets. The elongated shape of the bullet cone in the direction of fire led to the universal emplacement of the guns on the flanks of the sectors they were to cover. Frontal fire was no longer employed. The latest development in the tactics of this weapon was its employment for the purpose of forming a barrage in front of a position similar to the artillery barrage. It was used in this way by the British at the capture of Messines Ridge, where the German counterattack was stopped almost entirely by machine gun fire alone. In this connection a careful distinction must be made between the machine gun and the automatic rifle. The Lewis gun, of which so much has been heard, belongs to the latter class. The typical machine gun proper has two invaluable characteristics. It fires from a fixed mount and can be used effectively at night by previously setting it, while the water cooling system enables it to be fired continuously. The light gun or automatic rifle cannot be fired effectively at night but must have a visible target on which to aim, and it cannot be fired continuously. It has, however, advantages of its own in that it can move forward with infantry at the same rate as the troops, and can be carried on the shoulder, being thus difficult for the enemy to locate.

TACTICS OF THE OFFENSIVE. The underlying tactical principles of the various attacks delivered during 1917 followed the same lines as heretofore. Each attack was preceded by an intense artillery preparation lasting several days, by means of which the barbed wire entanglements were broken up and the trenches torn to pieces. Upon the completion of this preparatory bombardment the infantry advanced, and, if successful, occupied the enemy position and began its consolidation in anticipation of the inevitable counter-attack (see YEAR BOOK, 1916). The general scheme of the Allied offensive operations during the year 1917 was quite different in details, however, from that previously employed. The great blow of 1916, the battle of the Somme, was based upon the idea of continuous pounding on one comparatively restricted front. This method proved to be effective but expensive, even though it cost the defenders quite as heavy losses. In 1917 the fundamental conception appeared to be that of a series of sharp but very heavy blows delivered at different points along the front, meanwhile maintaining pressure on the whole line by means of artillery. This proved to be a difficult system to oppose if the attackers were willing to remain content with the gains secured in the first sharp struggle. The defending line could not be reënforced until the infantry attack had disclosed the exact location of the threatened point. By the time the reënforcements arrived at this point in sufficient numbers to counter effectively, the attack was over and the ground gained had been firmly organized. As an extension to this system there was developed the principle of the "limited objective." Formerly all units advanced as far as possible, with resulting irregularities in the distance gained according to the resistance encountered. The operation of straightening and readjusting the line was difficult and costly. In 1917 the practice was to designate a definite position as the objective for each unit. All parts of the command reaching their assigned objectives remained there until the whole line was secured, and no unit went forward until ordered to do so. This insured the occupation and consolidation of a practicable line at each stage of the operation. The purpose was to wipe out utterly one strongly fortified zone after another. The artillery preparation for each attack was long, careful, and elaborate. When the infantry advance was started the troops were preceded by a "creeping barrage," a wall of bursting artillery projectiles which was kept just in front of the attacking waves by carefully timed increases in the range. The idea was that the artillery should really gain the ground, the infantry merely moving forward to occupy the territory which had been cleared. This theoretical end was never attained but it was a noticeable result of the new system that the losses of the attacking force were reduced below those of the defenders, thus reversing the old proportion. It was evident that as soon as any advance of appreciable depth had been secured there must be a long wait before the attack could be resumed in that sector due to the necessity of moving forward the heavy artillery with its accompanying enormous supply of ammunition. As it was the heavy guns and not the readily transportable field pieces that must be moved, the concentration of the artillery in the new position to the front was a very slow and laborious task. This led more and more to the use of long-range pieces so the attack could be pushed for considerable distances without the necessity for a change in the emplacements.

TACTICS OF THE DEFENSE. As the French and British held the initiative on the western front during 1917 it is to the Germans that we must look for developments in the defensive. The first notable innovation of the year was their application to trench warfare of the old "strategical retirement" by the abandonment of all the positions either directly or indirectly threatened by the Somme operations. The retirement affected a strip of territory some sixty-five miles long and from ten to twenty-five miles wide. This entire area was systematically and ruthlessly devastated before the retirement—roads, railroads, depots, wells, orchards destroyed, even whole cities deliberately wiped out. The defending army withdrew to strongly fortified lines in the rear. Whatever may be thought of the complete destruction inflicted upon the abandoned area, there can be no doubt that the whole operation was admirably adapted to the requirements of a passive defense and it may well be found advisable to apply the same principle on other occasions and perhaps on a larger scale. Any offensive plans which the Allies might have projected for this part of the line were necessarily made useless and their preparations of no avail. It would require the lapse of months before the devastated area could be made passable for the materials and munitions needed for a new offensive and for the transportation of the artillery to positions within reach of the defenses. As a matter of fact, it was not until November that an important attack was delivered against the new line.

Turning now to the details of the defense, we find that the system of a series of continuous trenches has been abandoned in the sectors of greatest activity. Formerly the German defensive tactics were based upon their offensive formations—the employment of dense masses of troops. The trenches were manned heavily in defense in an attempt to thrust back the attackers by sheer strength of numbers. It was found, however, that the modern profusion of artillery and shells made that method too costly. The latest system—the so-called "Pill Box" defense—was quite different. The front line, often two trenches at a shallow interval in depth, was but lightly held under bombardment. The space between this and the second line, some two to four miles in rear, was thickly dotted with small, heavily protected concrete blockhouses for machine guns. Troops for the delivery of a counter-attack were massed in the rear trenches, which had numerous well-protected dugouts. The machine gun shelters, or "Pill Boxes," were carefully concealed and the probability of their being struck by direct aimed fire was slight. The theory of this system of defense was that the rushing of the front line trenches and the subsequent encounter with the machine gun posts would leave the attacking formations so disorganized that the counter-attack would have little difficulty in restoring the positions which had been temporarily lost. In some cases this defense did meet with considerable success, but in general it cannot be considered to have shown marked superiority to the old trench lines. One of the chief means employed in combating the "Pill Box Defense" was so to increase the intensity of the artillery preparation as to obliterate practically everything within range. "Tanks" and the small field pieces carried forward with the infantry are used to reduce the shelters which escape the preparatory bombardment.

THE TANK. The "Tank," or armored caterpillar tractor, which was introduced by the British in the Battle of the Somme late in 1916, made for itself a permanent place in the offensive equipment for modern war (see YEAR BOOK, 1916). Two types, the male and the female, were used by the British. The former mounted a field piece in addition to its machine guns, while the latter was armed with machine guns only. So important were these machines recognized to be that a special "Tank Corps," composed of selected officers and men, was formed during the year in the British service. The French also constructed tanks in large numbers. The particular use for which the tank showed itself especially suited was in the reduction of machine gun posts and isolated groups of riflemen. Proof against small arms fire, it could advance with impunity against the defensive shelter, and either force the surrender of the garrison or crush their protection beneath its enormous bulk. In the offensive toward Cambrai on November 20, 1917, a new field of usefulness for the tank was indicated. Here no artillery preparation was made, in order that the attack might come as a complete surprise. In place of clearing away obstacles by artillery, a great number of tanks were concentrated on the front of attack and moved forward in advance of the infantry to prepare the way. The experiment was entirely successful, which might indicate that a start had been made toward the development of a new tactical method of attack.

UNITED STATES

The entry of the United States into the great war necessarily brought in its wake vast changes in the military policy of the country. The regular army, as it existed prior to the declaration of war, was in a satisfactory state of efficiency, but it was too small to be considered a factor in a struggle the size of the present one. The only other force the nation possessed was the National Guard, which had recently been "Federalized" and was even then undergoing a general reorganization in an effort to render it suitable as a first line force to augment the regular establishment in case of war.

NATIONAL GUARD. The concentration of national guard troops for service on the Mexican border had shown that this force, as then constituted, was in a far from satisfactory condition. The organizations from a number of the States were excellent, but in too many cases this condition did not obtain. Most commands mobilized considerably below their "paper strength"; some had less than forty per cent of the prescribed war strength, while the average for all of the organizations called into the Federal service was just under sixty per cent of their war strength. Many of the men called out had had insufficient training, a not inconsiderable proportion being raw recruits. Nearly one-fifth of the originally enrolled members failed to pass their physical examinations. Hundreds of officers resigned and it was found necessary to discharge large numbers of men on account of dependents at home. The Federal regulations for the supply of the National Guard were also found to be defective when applied to the sudden equipping of great numbers of recruits.

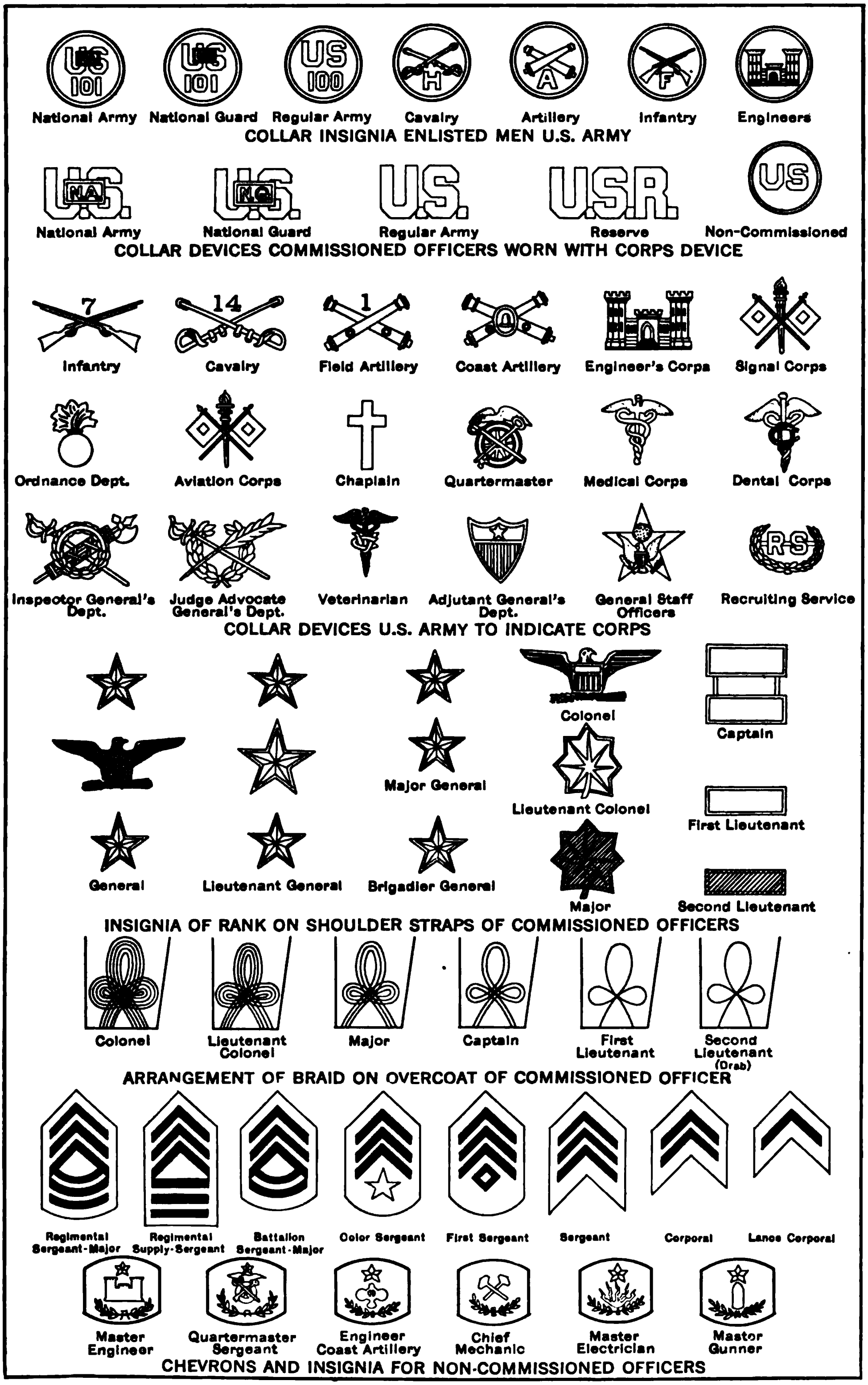
Though the mobilization of the National Guard on the border disclosed many weaknesses in the system, the organizations which participated were greatly benefited. Most of the non-effectives were eliminated and, as a result of an active recruiting campaign, their places were filled by men of the type most to be desired in the event of a greater emergency. The training which the various commands received during the concentration was most beneficial in assisting in the transformation of the Guard into a force upon which greater dependence could be placed in time of trouble. The mobilization had another effect, possibly less direct but equally as important. The guardsmen saw themselves, as a result of their having volunteered in time of peace to fit themselves for the service of their country in war, subjected to social and financial sacrifices from which their associates at home were exempt. It was borne in upon them that this system was far from equitable, and the great majority returned home, upon their demobilization, confirmed advocates of the principles of universal liability to service and compulsory military training. The country at large had been gradually reaching the conviction that the traditional volunteer system was not only inequitable but also ineffective. The experience of the National Guard mobilization crystallized this sentiment, rendering much easier the solution of the problem of organizing the forces which would be necessary for the prosecution of the war against Germany.

THE SELECTIVE DRAFT. When, on April 2, the president appeared before the Congress and requested that body to declare that a state of war existed between the United States and Germany, he recommended that the armies to be raised for carrying on the war be recruited upon the principle of selective conscription. Considerable opposition to this plan developed on the floor of Congress, but the "Selective Draft Act," embodying the administration's programme, was finally passed and was approved by the president on May 18. This act authorized the president: First, immediately to increase the regular army to the full strength provided by the "National Defense Act" of June 3, 1916, only one increment of which had so far taken effect. Second, to draft into the service of the United States the entire National Guard of the several States. Third, to raise by draft a force of five hundred thousand enlisted men with the necessary officers, and another similar force of equal strength at a later date, in his discretion. The draft was made applicable to all male citizens, or persons not alien enemies who had declared their intention to become citizens, between the ages of twenty-one and thirty years, both inclusive. It was provided that the regular army and the National Guard should be raised to and maintained at their maximum strengths by voluntary enlistment in so far as might be possible, the draft to be resorted to in these cases also whenever the president might decide that the number of volunteers was insufficient for the purpose.

REGULAR ARMY. On May 14 the Secretary of War, anticipating the passage of the "Selective Draft Act," authorized the issuance of orders for the formation of all the new regiments of the regular army contemplated by the "National Defense Act" of 1916. This involved the organization of 27 new regiments of infantry, 12 of field artillery, 6 of cavalry, and 4 regiments and 2 mounted battalions of engineers. The new organizations were formed by "splitting" existing regiments, thus forming nuclei of trained officers and men, which were later recruited to full strength. The regular army, as thus enlarged, consisted of 64 regiments of infantry, 21 of field artillery, 25 of cavalry, and 7 regiments and 2 mounted battalions of engineers, besides coast artillery, staff corps, and special service units. The entire regular army would comprise slightly over 12,000 officers and 293,000 men on the basis of the organization in effect at the time of the increase; i. e., the normal organization for the armies of the United States. In order that American units might agree in size and composition with those of the Allies and might thus better fit in with the positions already constructed on the front in Europe, an entirely new system of organization was temporarily adopted for all the land forces of the United States (see *Organization* below). With this organization it was estimated by the adjutant-general of the army that the prospective ultimate strength of the regular army would be 18,033 officers and 470,185 enlisted men. More than the number of enlisted men necessary to complete the first increase in the strength of the army were secured by voluntary enlistment. The latest reorganization was still under way at the end of the year, but it would appear that the draft must be resorted to if the organizations were to be at all promptly raised to their new strength and maintained there, though 337,347 men had enlisted up to December 15, when the enlistment of men subject to draft was stopped.

The problem of supplying officers for the greatly enlarged army was met in several different ways. The officers of the regular establishment were promoted to fill the vacancies caused in the upper grades by the expansion. Two classes were graduated from the Military Academy, the first in April and the second in August, two months and ten months respectively ahead of their proper times of graduation. This made available 290 new officers. Suitable enlisted men and civilians were encouraged to take the examinations for provisional lieutenant, the successful candidates being given provisional commissions which would be made permanent upon the expiration of two years if fitness was shown in the meantime. Temporary commissions were given to hundreds of enlisted men for the period of the existing emergency and many details to service with the regular army were made from the Officers' Reserve Corps. The process of filling vacancies by these various means was still under way at the end of the year.

NATIONAL GUARD. Upon the declaration of war against Germany the strength of the National Guard was 123,605 men. A vigorous campaign for recruits was at once undertaken throughout the country, with the result that when the guard was drafted into the national service on August 5 there were just short of 300,000 men enrolled. That greater care was exercised than formerly in the acceptance of recruits was evidenced by the fact that the rejections for physical defects upon muster into the Federal service were only 9.9 per cent of the number examined, as compared with 18.45 per cent at the time of the Mexican border concentration in 1916. Sixteen National Guard divisions were formed, each division being made up from the troops of contiguous States as far as practicable. New York and Pennsylvania each furnished one complete division; the Ohio division was complete except for one regiment of cavalry. The sixteen divisions were concentrated at an equal number of cantonments, most of which were located in the Southern States where climatic conditions would be more fa-



UNITED STATES MILITARY INSIGNIA

vorable for winter training than at points farther north. Few of the organizations were at full strength and most of them were short some of the necessary elements, particularly as regards auxiliary troops. With the adoption of the new organization it became necessary to reassign some of the elements and to convert some units into other branches of the service properly to balance the commands. Two additional divisions were later formed for early service abroad and were transported to France, the component parts being selected from all parts of the country. These divisions were popularly called the "Rainbow" and the "Sunset" divisions. A large number of drafted men were transferred to the National Guard to increase its strength, the exact figures not having been given out. On November 30 the National Guard consisted of 15,718 officers and 390,450 men. At war strength it will have approximately 487,000 men.

National Army. The adoption of the principle of universal military service for raising the forces which would be needed to augment the regular army and the National Guard in the prosecution of the war marks one of the most important events in the military history of the country. Heretofore the United States had entered each of its wars using the extravagant and comparatively inefficient volunteer system. It was indeed fortunate that the Congress and the people had the wisdom in this, the greatest test, to turn their backs on the traditional policy and accept the system best suited to the utilization of the resources of the country to the utmost. By a judicious scheme of exempting from service all those who had dependents likely to become public charges and those employed in essential industries, the fighting force was to be formed from the young men of the nation whose absence least would interfere with the internal economy of the land.

The name "National Army" was adopted for the forces called into being for the period of the existing emergency. The first problem in connection with the drafted forces was the matter of providing officers. The War Department at the outset adopted the policy of commissioning all new officers on the basis of demonstrated ability after three months' observation while undergoing training in Officers' Training Camps. Without waiting for Congressional action, but acting under the authority formerly given for civilian training camps, sixteen Officers' Training Camps were started on May 15 with a total attendance of about 40,000. These camps corresponded to the sixteen territorial divisions into which it had been decided to organize the first drafted troops. Each camp was to furnish all the company officers for the corresponding division and such other officers as might be required. At the close of these camps on August 14 there were commissioned 27,341 officers of all arms. Many of these were to be promoted to higher grades upon the calling of the second quota of drafted men. To fill the vacancies thus caused and to supply junior officers for the second draft another series of training camps for officers was held from August 27 to November 26. This afforded the last opportunity for those not in the military service to obtain commissions. Thereafter the necessary officers were to be obtained by the promotion of men already in the service, thus giving to those who had volunteered or had been drafted for duty an opportunity to become officers to the exclusion of civilians.

The registration of men subject to draft took place on June 5, the total number registering being about 9,600,000. The drawing of the numbers to determine the order in which men should be drafted occurred in Washington on July 20 and six weeks later the first draft reported at their divisional cantonments for muster into the service. A total of 687,000 men were called to the colors in the first draft, 500,000 for the National Army and 187,000 to fill vacancies in the National Guard. It was found necessary, however, to detach more than the estimated number from the National Army. The deficiencies which this left in the sixteen divisions of the National Army were to be filled from the second draft.

Organization. Though the normal organization of the United States army, based upon each command, consisting of three of the next lower units, was believed to possess many advantages over the usual European practice, it was decided that for the purposes of the present war it would be advisable to more nearly approximate the organization of our Allies. The army accordingly was reorganized as shown in the following summary. The figures are the total of officers and men for each entry. Each infantry division consists of:

1 division headquarters	164
1 machine gun battalion of 4 companies	768
2 infantry brigades, each composed of 2 infantry regiments and 1 machine gun battalion of 3 companies	16,420
1 field artillery brigade composed of 3 field artillery regiments and 1 trench mortar battery	5,068
1 regiment of engineers	1,666
1 field signal battalion	262
1 train headquarters and military police	337
1 ammunition train	962
1 supply train	472
1 engineer train	84
1 sanitary train composed of 4 field hospital companies and 4 ambulance companies	949
Total strength of division	27,152

The new organization increased the ratio of artillery and machine gun strength to infantry. In place of the old division of three brigades with three infantry regiments in each there was a division of two brigades with two infantry regiments in each. But in the new, as in the old, organization, there were three regiments of field artillery to the division. The increased artillery ratio was not quite so great as would appear, however, since the new infantry regiment approximately had twice the strength of the old one. A trench mortar battery, added to the artillery brigade, and three one-pounder cannon, attached to each infantry regiment, added to the gun strength of the division. Each division included a total of fourteen machine gun companies instead of nine as formerly. Each regiment had also been given 48 sections of auto-riflemen, each section carrying four automatic rifles or light machine guns.

An infantry regiment was to comprise 103 officers and 3652 men as follows:

1 headquarters and headquarters company	303
3 battalions of 4 rifle companies each	3,078
1 supply company	140

1 machine gun company	178
1 medical detachment	56
	3,755

Each rifle company was to have a strength of 250 men and 6 officers. It was to be composed of a company headquarters (2 officers and 18 men) and four platoons. Each platoon includes:

1 headquarters	2
1 section bombers and rifle grenadiers	22
2 sections riflemen, 12 each	24
1 section auto-riflemen (4 guns)	11
	59

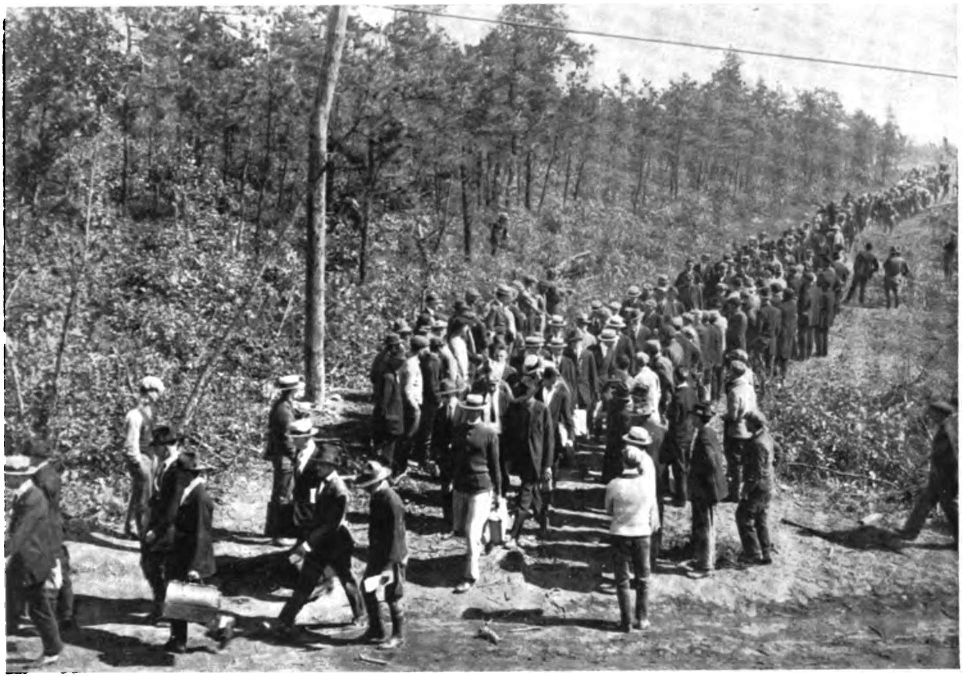
The machine gun company was to have 6 officers and 172 men. It was to consist of the headquarters (3 officers and 21 men), 3 platoons (each with 1 officer and 46 men), and a train of 13 men. Its armament was to be 12 machine guns of the heavy type and 4 spare guns with the train.

Material. The entry of the United States into the war found the material military equipment of the country lacking in many essential elements. The Ordnance Department of the army had developed an excellent system of armament for field use (see **Year Book**, 1916), but lack of appropriations in former years had prevented the manufacture of several of the larger calibres as well as the accumulation of a reserve of small arms and 3-inch field pieces. Though orders were placed at once for large quantities of equipment, ordnance material could not be supplied without the elapse of considerable time and it became necessary to find substitutes to fill the gap. Fortunately the manufacturers who had recently been supplying the British army with rifles were in a position to turn out rapidly the British Enfield, while it would take the better part of a year to equip the plants to make the United States army Springfield. The Enfield, chambered to fit the more powerful United States ammunition, was accordingly adopted to supplement the production of the American rifle. As regards field pieces, the French government stated its ability to supply all that would be needed for at least the first contingents abroad, so that the entire output of American factories could be used for the equipment and training of the troops in the United States. This assistance materially relieved the acuteness of the situation in the ordnance supply. The airplane equipment of the army already had been augmented largely and the manufacture of planes was proceeding at a constantly increasing rate. The "Liberty Motor," with which the new war-planes are to be equipped, has been developed by the coöperation of leading designers and manufacturers, and has satisfactorily met all tests. The motor is highly standardized so that its parts can be made at widely separated plants and assembled at central points (see **Aëronautics**). Two types of standard motor trucks have been designed and are being manufactured as rapidly as possible (see **Automobiles**). In most respects the year 1917 was marked as a period of preparation for supplying the material needs of our forces rather than by actual fulfillment. The spirit of earnest coöperation which has animated all concerned augurs well, however, for an early solution of all difficulties.

Bibliography. For details of matters relating to the armies of the United States consult annual reports of the Secretary of War and of the chiefs of the various bureaus of the War Department for 1917. For military questions, both abroad and in the United States, consult the *International Military Digest*, 1917, *passim.*

MILITARY SURGERY. The immense amount of surgical material that has been developed by the war had not produced anything remarkable in the way of novelty. Aside from the important lessons learned from experience in plastic surgery, in the management of perforating wounds of the abdomen, thorax, and brain, will be the better understanding of the control of wound infections. During the first two years of the war no little controversy, some of it quite bitter in tone, took place among the advocates of various methods of wound disinfection, but these questions appear to be satisfactorily settled. During 1917, the chief interest has centred about the Carrel-Dakin method of treating infected wounds. At first it was found difficult to make a definite constant hypochlorite solution, and the process was difficult and intricate. Now, however, the solution can be prepared cheaply, quickly, and accurately, by simply passing chlorine through a metre into a simple solution of sodium bicarbonate. The heads of the base hospitals at which the method is pursued are enthusiastic over the results achieved, and all observers are agreed that the procedure, though somewhat intricate, is by far the best yet devised.

The method and its philosophy as described by Lyle, of New York, is as follows: "To render an infected wound sterile it is necessary to employ a suitable antiseptic in such a manner that the chosen antiseptic comes into contact with every portion of the wound, that the antiseptic is maintained in a suitable concentration throughout the entire wound, and that this constant strength is maintained for a prolonged period. If these conditions are fulfilled, every wound will show its response to the treatment by the diminution and disappearance of its microörganisms." Dakin's solution is a 0.5 per cent solution of sodium bicarbonate. It is isotonic with the blood, a very active germicide and very slightly toxic, and non-irritating. It has, moreover, the important property of being able to dissolve pus, broken down tissues, etc., thus acting as a mechanical cleanser, as well as an antiseptic, while it does not attack living tissues. The wound is first prepared by thorough cleansing and the extraction of all foreign bodies such as dirt, clothing, remnants of shell. The operative field is then painted with tincture of iodine and the necrotic tissue and bruised skin edges trimmed away with knife or forceps. The wound is then laid open, all pockets and recesses explored and cleansed. Where possible the track of the projectile is carefully and gently resected, and comminuted fragments of the bone are removed. All bleeding must be thoroughly stopped, since Dakin's solution, owing to its hemolytic property, invites the danger of a secondary hemorrhage. Contrary to the usual practice, counter openings for drainage are rarely made, and should they be necessary, they should not be at the most dependent point, since the object of the technic is to keep the solution in contact with the wound surfaces and not to have it drain away. The solution is



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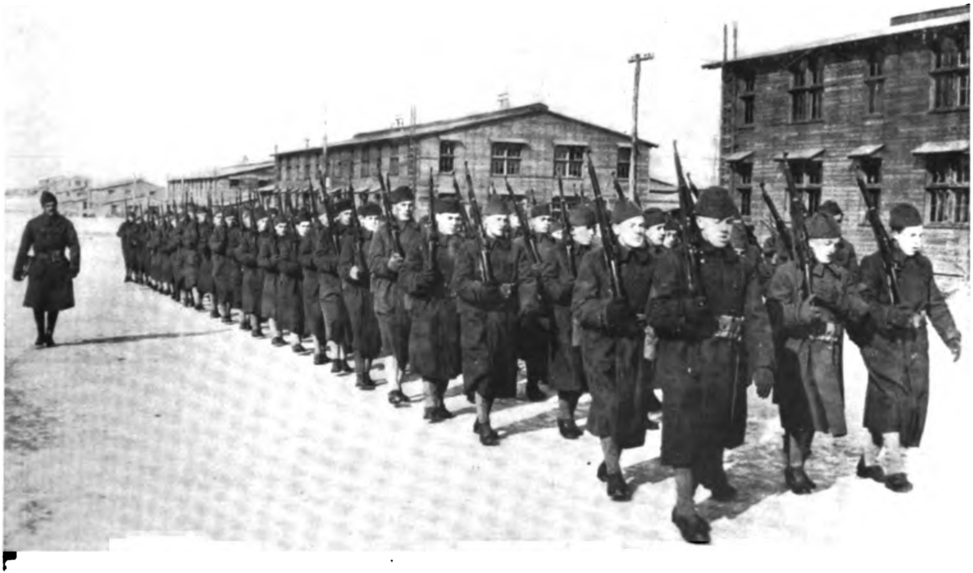
RAW RECRUITS ON THEIR WAY TO CAMP



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RECRUITS AFTER THREE MONTHS OF TRAINING

carried to the depths of the wound through a rubber tube, cut to the desired length and having several lateral perforations, so that the fluid may escape in every direction. One or several tubes may be used. They are secured to the edges of the wound by a rubber cuff and suture. In simple deep perforating wounds a single tube without lateral perforations is introduced into the depths of the cavity and the solution is allowed to well up from the bottom. In other large wounds terminating in a cavity with irregular collapsible walls, a little gauze may be introduced to support the walls of the cavity and allow a more thorough penetration of the fluid. Other variations in the placing of the tubes must be made to meet the indications of the particular type of wounds, but the principle is the same. The solution being irritating to the skin, this tissue has to be protected by covering it with sterile petrolatum. The tubes are connected with a reservoir of the fluid, but a continuous flow is not maintained. Instillations of the fluid are made about every two hours by releasing a clamp which controls the flow. The amount of solution required varies with the nature and extent of the wound, but 10 c.c. per instillation is the average amount. Instillations are kept up in this manner until the wound is sterile. The wound is inspected daily; and the number of microbes on the surface determined every second day by transferring some secretion to a slide and counting the number of organisms in the microscopic field. When germs are absent from the wound on three successive countings it is considered sterile and in suitable cases may be closed by suturing. Where this is not possible the edges of the wound may be brought together by the application of adhesive straps. Wounds treated by the Carrel technic have a bright red, healthy appearance, abundant granulations, little secretion, no odor, tenderness, or thickening of the skin edges. They heal with the minimum amount of connective scar tissue and the scars are said to be very pliable. Carrel's method is used exclusively at the Depage Hospital and the favorable results may be estimated from the figures during one month. During this period 137 cases were sutured, complete union taking place in 112, partial union in 23, and failure in 2 cases. These figures include 6 wounds of the knee, 12 amputation stumps, 17 fractures, and 102 wounds of soft tissues. Depage treated 80 compound fractures with entire absence of suppuration, and during one month Carrel's service closed 450 wounds, of which only 6 failed to unite.

Dr. Guillaume-Louis extols the virtues of magnesium chloride solution after having an experience with more than 1200 severely wounded soldiers. After employing various other methods of dressings, including Dakin's solution, his procedure resolves itself into the following routine: "Removal of all foreign bodies and necrotic tissue; disinfection with ether." After the first time he made use of various therapeutic measures, but experience led to his preferring magnesium chlorid. He does not use any drains. Instead, he places in the wound a wick which soaks up the solution. On the surface he applies a compress saturated with the same solution. The dressing is renewed every day with the greatest possible aseptic precautions. Rapidly, under the influence of magnesium chloride, the wound is cleansed, the pathogenic agents are diminished in number, and the secretions are dried up. In the course of a few days the wound is disinfected sufficiently so that it can be sutured for secondary union.

MILITARY TERRITORY OF THE NIGER. A territory of the government general of French West Africa. The capital is Zinder. See French West Africa.

MILITARY TRAINING CAMPS. See Military Progress.

MILITARY TRAINING IN PUBLIC SCHOOLS. See Education.

MILK. See Dairying.

MILLER, William Henry Harrison. An American lawyer, died in Indianapolis, Ind., May 25, 1917. He was born at Augusta, N. Y., in 1840 and was reared on a farm. He attended Hamilton College, graduating in 1861. This institution conferred on him an honorary LL.D. in 1889. In 1862 Mr. Miller became a lieutenant in the 84th Ohio Volunteers in the Civil War. After being admitted to the bar in 1865, he practiced at Fort Wayne, Ind., till 1874, and afterward in Indianapolis in partnership with Gen. Benjamin Harrison. The latter, upon being elected President of the United States, appointed his associate attorney-general, and no change was made during the administration. Mr. Miller participated in the conduct of the Terry case, resulting from the killing of David S. Terry, a California lawyer, by a United States marshal; in the Behring Sea litigation; in the dispute regarding the constitutionality of the McKinley Tariff Law; and in the controversy over the Interstate Commerce and Anti-Lottery laws. In the Terry case he contended that the constitution provided for the protection of the judicial branch of the government by the executive. In 1893 he returned to the practice of law in Indianapolis.

MILLING. See Agriculture.

MINERALOGY. General. The year's record for mineralogy included no discoveries or investigations of paramount importance. There was no lapse of interest in the subject in consequence of the war, but the trend of research undoubtedly was directed more toward the economic aspects than heretofore. Every country was drawing upon its mineral resources to an unparalleled extent and at the same time was attempting to attain economic independence as far as possible by developing resources that had not been previously utilized. In the United States serious deficiencies in mineral supplies resulted by reason of the disturbance of foreign trade, notably in such essential commodities as potash salts, manganese ores, platinum, and graphite, which ordinarily are mostly imported. The work of the mineralogist in the study and description of field occurrences proved of great service in the development of new sources of supply.

Notable Works. The issue of mineralogical treatises appeared to keep fully abreast with the growth of interest in the science, if the number of recent publications afforded any criterion. The most recent entry in the list was *Descriptive Mineralogy*, by W. S. Bailey. It presented a comprehensive view of the subject, with a well-sustained balance between the several chapters on mineral classification, blow-pipe analysis, chemical composition, formation and alteration of minerals, and description of the individual species. The discussion of crystallography, contrary to the usual practice, was omitted, or rather was presented by the author in a separate volume. A new edition of ***Elements of Mineralogy, Crystallography and Blowpipe Analysis*** was brought out by Moses and Parsons who had thoroughly revised the text and added many new features.

THE AMORPHOUS GROUP. The study of amorphous minerals, according to A. F. Rogers, had not kept pace with the progress made in the investigation of crystalline forms. Their neglect may be explained by the difficulties which hitherto have confronted the student who would enter this field, also partly owing to the greater attraction which crystals possess from their definite mathematical and physical properties. Some of the hindrances to their study have been now removed by the recent advances of colloid chemistry. To discriminate the colloid or amorphous from the crystalline state requires the employment of various tests—optical behavior, cleavage, specific gravity, chemical analysis, etc. —whichever may be best available for the particular substance in hand. The presence of water may be a critical factor, since it is almost always an accompaniment of the colloid state. Rogers proposed the term colloform for the rounded, nearly spherical shapes assumed by colloidal and metacolloidal substances, the last kind being microcrystalline aggregates of colloidal origin. With regard to chemical composition it is possible to place too much reliance upon the quality of variability as a test, since some crystals are known to consist of solid solutions which admit of wide variation. Amorphous minerals that have distinct properties deserve independent rank and a separate designation. As an illustration, Rogers would reserve the name hematite for the more common non-crystalline form of iron oxide, whereas the crystalline equivalent is called specularite. About 20 species are listed in the class.

STUDY OF OPAQUE MINERALS. A summary of the methods applicable to the examination of the opaque minerals, which had been compiled by J. Murdock will be found especially useful by students of ore-deposits who are frequently called upon to distinguish intimate intergrowths of the metallic compounds. Its aim is to place their study upon a similar basis to that which the polarizing microscope has made available for the transparent minerals. The tests employed are in part physical and in part chemical. Of the former color is considered of great importance and has been adopted in the scheme for the classification of minerals into the main groups. Three groups are thus erected—colored, white, and gray. The white group is so extensive that its subdivision is necessary and minor groups recognized according to the particular shades, whether pure white, or gray, pink, yellow, or blue tints of white. Difference in hardness is tested by the steel needle, and the response to chemical reagents permits further differentiations to be made until the specimen under examination may be isolated.

COLOR IN QUARTZ. The source of the disperse colors that occur in some kinds of quartz was ascribed by T. L. Watson and R. E. Beard to the inclusion of small amounts of foreign substances, of which the commonest are manganese, iron, and titanium oxides. The amethyst contains more than the average amount of manganese and this is no doubt the cause of the purple color. The manganese is present as oxide in colloidal particles of ultra-microscopic size. Rose quartz can be bleached by heat and its original appearance can not be restored thereafter by exposure to the sun's rays or to radium emanations, so that the color can hardly be due to any inorganic substance. The blue quartz that is a characteristic accompaniment of some titanium ores was found to derive its color from the dispersive property of small rutile crystals that are arranged according to definite pattern.

REVISION OF SPECIES. F. W. Clarke gave an explanation of the composition of melilite and gehlenite whose chemical structure had long been an enigma. He came to the conclusion that they were to be considered mixed crystals of a few compounds of similar chemical type. P. A. van der Meulen described certain clays of Georgia which had passed as halloysite but which he found to be really mixtures of kaolinite and hydrargyllite in company with small amounts of other substances. It would appear that some of the high-alumina clays which have been regarded as distinct from kaolin were mixtures of that mineral with alumina hydrates, such as hydrargyllite. The identity of hamlinite and goyazite, according to W. T. Schaller, seemed to be strongly indicated by the similarity of properties. At least additional proof must be forthcoming before they can be regarded as other than variations of one species.

NEW MINERALS. *Eakleite* (named after Prof. A. S. Eakle, of the University of California) is a hydrated calcium metasilicate. It occurs in fibrous aggregates at St. Inez, Cal., and may be regarded possibly as a calcium pectolite. Its hardness is nearly that of quartz. *Crandallite*, a hydrated phosphate of aluminum and calcium, forms compact cleavable masses that are without crystal outline and are white to gray in color, transparent in thin section. *Catoprite* is a black metallic mineral of complex composition, having manganous oxide as the chief constituent, but containing also the oxides of antimony, silicon, aluminum, and iron. It occurs at Nordmarken, Sweden, where it is found embedded in calcite with magnetite and other minerals. Its crystallization is monoclinic. *Ectoprite* comes from Langban, Sweden, where so many rare minerals have been discovered. It is a hydrated manganous silicate of opaque black to light brown color, and is associated with garnet, barite, and calcite. The crystal habit seems to be monoclinic. ***Flokite*** is one of the zeolite minerals; it contains alumina with minor amounts of lime and soda, united to silica, and yields water. It has a monoclinic form, the crystals being transparent and colorless or faintly tinted. It comes from Eskefjord, Iceland. ***Crestmoreite*** belongs to the hydrous calcium silicates and has a snow-white vitreous appearance. The locality is Crestmore, Cal. *Riversideite*, another hydrous calcium silicate, contains less water than the preceding and has a silky lustre. It occurs in fibrous veinlets traversing vesuvianite. ***Gilpinite*** is a pale yellow or greenish yellow uranium sulphide with minor amounts of copper, iron, and sodium. It forms crystalline aggregates that are associated with gypsum, as a coating of copper ore in Gilpin County, Col. Its crystal habit is probably monoclinic. ***Magnesiolud-***

wigite is magnesium ludwigite of ivy green color, found in the Big and Little Cottonwood districts, Utah. *Lorettoite* consists of a combination of lead oxide and lead chloride in the ratio of six parts of the former to one of the latter. It is probably tetragonal in habit. The color is honey yellow. The locality is Loretto, Tenn. *El Doradoite* belongs to the quartz group, possesses a splendent color in blue or bronze and is employed as a gem stone. It is an ingredient of coarse pegmatite that occurs in El Dorado County, Cal. *Merrillite* is calcium phosphate of meteoric origin.

MINERAL PRODUCTION. The increased value of the mineral production of the United States in 1916 was more than $3,470,000,000, an increase of $1,076,200,000, or 45 per cent over the value in 1915, and exceeding 1913, the former record year, by over $1,000,000,000. Practically all the minerals shared in this increase, gold being the only one of the more important which showed a decrease in value. Silver and anthracite coal, while they showed a decrease in quantity, increased in value.

The metal production in 1916 established a new record, exceeding for the first time $1,000,000,000, and approaching a total of $1,622,000,000, but the total increase in pig iron and copper contributed 80 per cent. Large gains were made in zinc, lead, aluminum, and tungsten ores. The total value of the non-metallic products increased nearly $278,000,000 over the value of 1913, the year of next highest output.

ALASKAN MINERAL PRODUCTION. Two causes materially reduced the mineral output for the year—first, serious labor troubles, and secondly, the increased cost of materials which made operations unprofitable. As a result the value of minerals in 1917 decreased $6,870,000, as compared with that of the previous year. It is, however, to be borne in mind that 1916 was the year of maximum mineral productivity in Alaska. The aggregate value of the mineral output to include 1917 exceeds $391,000,000,—of which the essential values are those of gold, $293,000,000, copper, $88,200,000, and silver, $4,750,000. The annual values of the mineral products for the past three years are: 1915, $32,854,229; 1916, $48,632,178; 1917, $41,760,000. The maximum output for any preceding year was that of 1906, $23,378,428, when the gold values were at the highest stages, amounting to $22,036,794.

Gold. The production of gold in 1917, to the value of about $15,450,000, is the minimum output since 1904. The decrease from that of 1916 is small,—$1,790,000—and is due to the caving-in and flooding of certain levels of the Treadwell mines. The values of the gold mined the past three years are: 1915, $16,702,144; 1916, $17,241,713; 1917, $15,450,000. Of the grand aggregate of $293,500,000 of gold mined in Alaska, no less than $207,000,000 was obtained from placers. The placer output of 1917 of $9,850,000 showed a marked decrease of $1,290,000 from that of the previous year. While the placers held their own in relative superiority to the lode products, yet it is evident that in future the percentages of placer production will decrease, giving way to those of the lodes. The increases in values in 1917 were confined to the placers in the camps of the Tolovana, Marshall, Ruby, and the new Tolstoi districts. Elsewhere the high cost of supplies and the scarcity of labor caused decreases. The principal outputs in the Yukon basin, where the yields as a whole were smaller than in 1916, were as follows: Iditarod, $1,500,000; Tolovana, $1,100,000; Ruby, $875,000; Hot Springs, $450,000; Marshall, $425,000; Koyukuk, $250,000; Circle, $200,000. The Seward Peninsula yielded gold values to the amount of $2,700,000 in 1917, a slight reduction from the values of the previous year. The Kuskokwim output remained practically unchanged. The number of gold-lode mines operated was 35, an increase of 4 over 1916, but the output decreased from $5,912,000 in the former year to $5,250,000 in 1917. The Juneau district continues to be the main centre of the quartz-mining developments. Willow Creek, Prince William Sound, Kenai Peninsula, and Fairbanks await cheap fuel, to come soon with improved transportation facilities, to develop promising gold-lodes.

Silver. As yet Alaskan silver is a by-product of gold and copper mining, though economic mining of it is probable at an early date. The silver product of 1917 is valued at about $1,050,000, against $907,554 in 1916, and $543,393 in 1915.

Copper. At present copper leads in value the mineral products of Alaska, a position that it attained in 1916 when it exceeded the gold production by about $2,250,000. The astonishingly rapid development is apparent from the outputs of copper the past four years: 1914, 21,450,268 pounds, valued at $2,852,934; 1915, 86,509,312 pounds, $15,139,129; 1916, 119,602,028, $29,484,291; 1917, 88,200,000, about $24,000,000. During 1917 there were operated 17 mines,—8 in the Ketchikan, 6 in the Prince William Sound, and 3 in the Chitina district. The production was very materially reduced owing to serious and prolonged labor troubles. The mines of the Chitina district far exceeded in production the other districts. As usual the Kennecott-Bonanza mine overshadowed all others in the ore mined. Developments in the Ketchikan and Prince William Sound districts promise increased outputs in 1918.

Coal. Exclusive of the small amounts of low-grade coal used locally, the output for 1917 amounted to about 61,000 tons, valued at $300,000. Coal of equal value was imported for domestic use largely. The greater part of the Alaskan coal was mined in the Matanuska field, where the largest producer, the Eska Creek mine, was taken over by the U. S. Railroad Commission. The coal lands of the Nenana district have been sub-divided by the government preparatory to leasing to the general public. It is expected that the U. S. Railroad will be so far completed during 1918 as to permit the speedy development of the coal in the Nenana region. The patented coal-lands of the Bering River field are soon to be developed, through the building of a private railroad now in course of construction from Controller Bay to the Bering River Valley.

Tin. The output of tin, about 232 tons in 1917, came in large part from the York district. The Lost River lode-tin mines are under development, while considerable tin concentrates are obtained from gold placers, especially in the Hot Springs district.

Miscellaneous. The mining of antimony ore (stibnite) has decreased with lower prices.

Tungsten was mined on Seward Peninsula and in the Fairbanks district, the developments in the latter region promising a large increase in 1918. Platinum was obtained in small quantities from placer-gold—about 81 ounces in all. Chromium was first obtained in Alaska in 1917. Marble, gypsum, and graphite were mined in quantities as usual. While the amount of petroleum was somewhat increased, there were no new producing wells obtained. The uncovering of large bodies of magnetic iron ore in the Ketchikam district revealed a source of iron of economic importance.

MINIMUM WAGE. Beginning in 1912 with a law in Massachusetts providing for investigations of the wages paid to women in various unskilled trades there has been a great volume of investigation of the same matter in various American States and the enactment of laws prohibiting the payment of wages less than those publicly prescribed. While the first law in Massachusetts merely authorized the investigating commission to publish the facts and recommend a standard wage, depending on public opinion for enforcement, all subsequent laws have either prescribed minimum wages in the statute or created commissions with authority to investigate and promulgate minimum rates. Previous to 1917 minimum wage laws had been enacted in Arkansas, California, Colorado, Kansas, Massachusetts, Minnesota, Nebraska, Oregon, Utah, and Washington. During 1917 new laws were enacted in Arizona and Colorado; there were a few other legislative changes; and there were important judicial interpretations by the State Supreme Court of Arkansas and the United States Supreme Court. There were also developments in Great Britain and Switzerland as indicated below.

ARKANSAS. On June 4 the State Supreme Court of Arkansas sustained as constitutional the minimum wage law enacted in 1915. This law limited hours of labor for women to nine per day, except for a total of overtime of ninety days per year; made unlawful payment of less than $1.25 per day for women workers of six months' experience in manufacturing, mechanical or mercantile establishments, laundries, and express and transportation companies, or less than $1 per day for inexperienced workers; and required the payment of time and a half wages for any excess over the prescribed nine hours per day. The law also provided for piece workers and for investigations of female labor in canneries, hotels, restaurants, and telephone establishments. The lower court had declared the law unconstitutional. The main ground of the higher court's decision was the necessity of regulating the employment of women and children for the future benefit of the race. The chief justice of the court dissented on the ground that he could perceive no relation between wages of women and their health or morals.

ARIZONA. The Arizona law, effective June 6, enacted a minimum wage of $10 per week for women employed in stores, offices, shops, restaurants, hotels, rooming houses, laundries, and manufacturing establishments.

CALIFORNIA. The Industrial Welfare Commission issued a new set of regulations governing hours of labor, sanitary conditions, and minimum wages in part effective on June 16. The new regulations removed a former limitation upon overtime work, but reduced the normal working hours from ten per day and sixty per week to nine per day and six days per week. But overtime is permitted upon payment of not less than one and one-fourth wages for all excess up to twelve hours per day and not less than double wages for all excess over twelve hours per day. This order also established new minimum time and piece rates for various branches of the fruit and vegetable canning industries, including the care of apricots, pears, cling and free peaches, asparagus, and tomatoes. In general, these orders fixed sixteen cents an hour as a minimum rate for experienced time workers; provided a normal fifty-four-hour week, and consequently a minimum wage of $8.64 per week. This wage may be compared with the minimum of $8.90 in Washington, $8.64 in Portland, Ore., and $8.25 in the remainder of Oregon. In the latter State the working week is also fifty-four hours, but in Washington there is no absolute limit upon the hours of women workers in canneries.

Another order of the commission, effective September 6, fixed a minimum of $10 per week and $44.33 per month for experienced women in mercantile establishments. Rates for learners were: $6 per week for those under eighteen, and $8 for those over eighteen, with increases in both classes of fifty cents every six months until $10 is reached. Hours were fixed at eight per day and forty-eight per week. See WOMEN IN INDUSTRY.

An act of the legislature creating highway districts fixed $3 per day as the minimum wage for labor in highway construction.

COLORADO. The Colorado law repealed the act of 1913 and enacted another, making it unlawful to employ women at wages inadequate to "supply the necessary cost of living and maintain in health the women so employed." Minors may not be employed "for unreasonably low wages"; nor women or minors under conditions "detrimental to their health or morals." The Industrial Commission is authorized after investigation, which it must undertake for any trade when requested by twenty-five persons therein, to fix wages, hours, and such other conditions as it deems reasonable. The commission may appoint wage boards for any trade consisting of not more than one of its own members with three representatives of each of the parties, labor, employer, and public. Such board may investigate and present its judgment, but final review must be made by the commission.

MINNESOTA. In 1914 the Minnesota Legislature passed a law for the purpose of establishing minimum wages, but without basing such legislation on conditions of hours or health. On November 14, 1914, an injunction was secured preventing the minimum wage commission from taking action under the new law. Three years later, during which time the commission had been unable to act, arguments were made before the Minnesota Supreme Court on the constitutionality of the law. This was the second argument before that court, it being deemed advisable to reargue the case in view of decisions of the United States Supreme Court with reference to workmen's compensation and the Oregon Minimum Wage Law. Decision had not been rendered before the close of 1917. The legislatures of both 1916 and 1917 had made appropriations for the maintenance of the commissions. It was pointed out that if the law was declared constitutional employers affected by six orders made by the commission before it was enjoined would be liable for civil damages to the extent of differences in wages paid and wages fixed by these decrees.

MASSACHUSETTS. The Massachusetts commission may investigate and publish its findings but has no power of enforcement. Nevertheless the law has been attacked as unconstitutional. In 1915 the commission found more than 50 per cent of laundry employees receiving less than $6 a week, while $8.77 was deemed necessary to maintain the health of a self-supporting woman. It recommended a minimum wage of $8 a week after September 1, 1915. It subsequently sought to determine what concerns were applying the recommendation but met with the refusal of some to show their books on the ground that the law was unconstitutional. Argument was made before the State Supreme Court in December, 1917; decision not rendered in 1917.

NEW YORK CITY. In 1915, after a careful study of costs of living, wages of sweepers in the street cleaning department wages were fixed by the Board of Estimate and Apportionment at from $720 to $840 per year. The cost of living in this case included man, wife, and three children. A similar study in 1917 showed an advance of 16⅔ per cent in cost of living; consequently the wage scale was made to range from $792 to $888 for sweepers, with similar increases for other grades of employees.

OREGON. On April 9 the United States Supreme Court rendered a decision upholding the Oregon Minimum Wage Law. This established the right of a State legislature to enact such a law as a health measure. There were two cases before the court, first argued in December, 1914, the brief being prepared by Louis D. Brandeis, afterwards appointed associate justice, and Josephine Goldmark. The cases were reargued in October, 1916, by Professor Felix Frankfurter of the Harvard Law School, the original brief being amplified. This brief is in itself remarkable. It gives the world legislation relating to minimum wages; 687 pages of information on the experience upon which such legislation is based; and a great mass of evidence from government reports, public and private investigations and the opinions of eminent economists and sociologists throughout the world. It thus brought before the court numerous matters of common knowledge and forced the decision upon the basis of economic and social facts rather than upon the basis of legal precedent.

These two cases were Stetler *v.* O'Hara, and Simpson *v.* O'Hara; they came up on appeal from the Supreme Court of Oregon. Stetler was a paper box manufacturer in Portland; Simpson a woman in his employ at a wage less than that advised by the Industrial Welfare Commission; and O'Hara the chairman of that commission. The grounds of attack on the act were: it is contrary to the equal protection clause of the constitution; to the due process clause; and to the privileges and immunities clause. In support of the statute it was argued that the aim of the legislature was legitimate; and "within the scope of the constitution"; that the "means" were "appropriate and plainly adapted" to these ends; and that no rights of the plaintiffs were contravened by these means or ends. The brief pointed out that the law and its administration were free from arbitrary or wanton interference with the activities of the complainants and did not result in spoliation of their property. The only liberty affected was the prohibition of wage contracts below the standard set by the commission as necessary for normal living. With reference to the Simpson case the brief asserted that her case was "inspired," that is, filed in the interest of her employer rather than of herself. The benefits of minimum wage legislation as regards health and general welfare, including industrial peace, were indicated. The elements entering into the minimum wage were set forth, it being indicated that the wage was only sufficient to preserve working energy and to provide shelter and clothing necessary for protection from the elements. The brief said: "The significance of this is that the expenditure by some one of every penny of this whole sum of $8.64 upon Simpson goes to the operation of the industry and merely provides for the cost of that operation. It goes to the maintenance of the average labor power purchased by the employer and devoted to the industry."

OTHER LAWS. Hawaii raised the minimum wage for laborers on public works from $1.50 to $2 per day. Connecticut appointed a commission to study the minimum wage question along with others pertaining to social insurance (q.v.). Washington extended its law to include the telegraph industry.

GREAT BRITAIN. Since the Parliamentary law creating minimum wage boards for certain sweated industries first enacted in 1909, the application of the general principle of determining wages by means of boards or commissions with power to investigate and decree wage schedules has become a general feature of English industrial life. During the war extensive use of this principle has been made in the repeated readjustment of wage scales to harmonize with the increasing cost of living in munition plants and other industries particularly important in the prosecution of the war. In July the House of Commons embodied in the Corn Production Bill a section establishing wage boards for agricultural laborers, with the proviso that in no case should a wage less than $6.25 per week, including the value of perquisites, be fixed. The Government stated that the bill was not intended to prevent wage boards from establishing a higher minimum for agricultural labor in any section. The bill placed upon the Government responsibility for reimbursing farmers for any loss incurred through any advancement of wages made by wage boards.

SWITZERLAND. Early in the spring the Swiss Bundesrat established minimum wage boards for the embroidery industry. The arguments leading to the establishment of such boards were those used in England, United States, and Australia with reference to the necessity of protecting labor in unskilled and sweated trades. The ultimate authority to decree minimum wages is placed with the State Department which, following the report of a representative wage board, may fix both time and piece rates of pay.

MINING, BUREAU OF. See UNITED STATES.

MINNESOTA. POPULATION. The population of the State in 1910 was 2,075,708, and on July 1, 1917, it was estimated to be 2,312,445.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	3,000,000	90,000,000	$99,000,000
	1916	2,600,000	87,100,000	69,680,000
Wheat ..	1917	3,310,000	57,965,000	117,089,000
	1916	3,465,000	26,410,000	42,784,000
Oats	1917	3,250,000	120,250,000	75,758,000
	1916	3,325,000	88,112,000	41,413,000
Potatoes .	1917	300,000	33,600,000	30,576,000
	1916	280,000	16,800,000	21,840,000
Hay	1917	1,850,000	*a* 2,868,000	34,703,000
	1916	1,890,000	3,496,000	24,472,000

a Tons.

Mineral Production. Minnesota is the first of the States in the production of iron ore. The total quantity mined in 1915 was 33,464,660 gross tons, compared with 44,585,422 gross tons in 1916. The quantity shipped from the mines of the State in 1915 was 32,545,236 tons compared with 45,869,251 in 1916. The value of the ore shipped in 1915 was $57,742,643, compared with a value in 1916 of $106,628,784, an increase of 13,324,015 tons, or 41 per cent in quantity and $48,886,141 or 85 per cent in value. All the iron ore mined in the State is hematite. In addition to the iron ore shown above, there were shipped 240,403 gross tons of manganiferous iron ore, valued at $790,762, in 1916, compared with 42,973 tons, valued at $187,971 in 1915.

Transportation. The total mileage of railroad track in the State on June 30, 1916, was 89,996. The lines having the longest mileage were: The Great Northern, 2100; the Minnesota, St. Paul, and Sault Ste. Marie, 1131; the Chicago, Milwaukee, and St. Paul, 1233; Northern Pacific, 1021.

Finance. The report of the State treasurer for the fiscal year 1915, the latest for which statistics are available, shows a balance on hand on July 31, 1914, of $3,807,000. The receipts for the year amounted to $22,481,933, and the disbursements to $22,957,751, leaving a balance on July 31, 1915, of $3,332,006.

Education. The total enrollment in the public schools of the State in 1916 was 481,583. The average daily attendance was 374,632. The number of teachers was 17,792. The average monthly salary of male and female teachers was $62.15.

Charities and Corrections. The charitable and correctional institutions of the State include the Anoka State Asylum, the Hastings State Asylum, the Fergus Falls State Hospital, the Rochester State Hospital, the St. Peter State Hospital, the School for the Blind at Fairbault, the School for the Deaf and the School for the Feeble-Minded at Fairbault, Owatonna State Public School, the Red Wing State Training School, the Sauk Centre Home School for Girls, the St. Cloud Reformatory, the Stillwater State Prison, the State Sanatorium for Consumptives, Phalen Public Hospital for Crippled Children, and the Willmar State Hospital for Inebriates.

Politics and Government. There were no elections in the State in 1917 and few political happenings of general interest. In February, the House of Representatives passed a bill providing for the submission of a constitutional amendment to the people, giving full suffrage to women. On February 15, the State Senate passed a bill previously passed by the House, submitting a prohibition amendment at the election of 1918.

Legislation. Among the more important measures passed by the legislature of 1917 are those noted below.

A measure was passed providing for the immediate settlement and distribution of estates of less than $650 if all the property is exempt from the payment of debt. It was also provided that no person guilty of murder may inherit or share in the property of the person killed. The right of aliens to possess firearms was prohibited. A Public Safety Commission was created with general power to do anything necessary to make efficient use of the resources of the State toward the successful prosecution of the war. This act authorized the removal, if necessary, of any public official. It was made a gross misdemeanor to circulate printed matter or advocate orally that men should not enlist in the military forces of the United States. Provisions were made for the voting of citizens absent from the State in the national service. A uniform sales act was passed. Amendments providing for prohibition and importation of liquors were proposed. The laws relating to labor and labor disputes were amended. It was made a felony to advocate "criminal syndicalism." Legislation was passed looking to the prevention of monopolies and unfair discriminations in the buying and selling of commodities, especially food products. A "Blue Sky" law was enacted. Amendments were made to the laws regulating drainage districts in the State. Concurrent jurisdiction of the courts and administrative officers over all boundary waters between Minnesota, North Dakota, Iowa, and South Dakota was recognized. Important amendments were made to the laws relating to the control and care of the feeble-minded and laws relating to eugenics were passed.

State Officers. Governor, J. A. A. Burnquist; Lieutenant-Governor, Thomas Frankson; Secretary of State, Julius A. Schmahl; Auditor, J. A. O. Preus; Treasurer, Henry Rines; Attorney-General, L. A. Smith; Adjutant-General, Walter F. Rhinon; Superintendent of Education, C. G. Schulz; Commissioner of Insurance, John Sanborn.

Judiciary. Supreme Court: Chief Justice, Calvin L. Brown; Associate Justices, G. L. Bunn, Oscar Hallam, Andrew Holt, James H. Quinn; Clerk, I. A. Caswell.

MINNESOTA, University of. A co-educational State institution of learning, located at Minneapolis, Minn. In the fall of 1917 there were 4468 students and 616 members of the faculty; there were also 1315 students in the extension classes. Volumes in the library numbered 245,000. In 1917 M. L. Burton, Ph.D., D.D., LL.D., formerly president of Smith College, was elected president; John R. Allen, dean of the College of Engineering and Architecture; W. E. Hotchkiss, professor of economics; Miss Katherine Ball, vocational advisor of women; and Miss Gertrude Beggs, dean of women. William J. and Charles H. Mayo, of Rochester, Minn., donated to the university through the Mayo foundation the sum of $1,650,345 for medical education and research. Productive funds in 1917 amounted to $1,605,356 and the income therefrom to $59,575. The university was founded in 1868.

MIRBEAU. Octave (Henri Marie). A French writer, died in Paris, February 16, 1917. He was born at Trévières (Calvados) February 16, 1850, and came of a bourgeois family. The Collège de Vannes, then a Jesuit institution, which he attended for a time, he described in uncomplimentary fashion in *Sébastien Roch.* For a short time, after he had tried his hand at dramatic criticism, he was on the staff of the *Figaro*, but a vitriolic article entitled "Le comédien" brought down the wrath of Coquelin and other actors, and Mirbeau, leaving this paper, joined with Paul Hervieu, Capus, and Grosclaude in founding the weekly, *Les grimaces.* His utterances gained him much enmity, among conservatives especially, for Mirbeau seemed to be the champion of each new movement in politics, literature, and art. By turns he was royalist, Catholic, militarist, anticlerical, internationalist, and even anarchist, but before his death loyalty to a united France took the place of all these. It has been declared that to Mirbeau is owed the discovery of such geniuses as Rodin, Pissaro, Monet, Cézanne, and Maeterlinck. In later years he became an advocate of Futurism. Mirbeau declined various honors, but accepted election to the Academy of the Goncourts. His writings are chiefly characterized by the freedom with which the author displays his dislikes and hatreds. Hardly an institution of conventional society escaped his pen, but it is likely that when he appeared to be attacking institutions themselves, it was their faults that he aimed at. His bitter contempt for human customs was in contrast to a remarkable fondness for animals and love of nature. In his fiction he follows rather closely the naturalistic method of Zola. Earlier works were *Le calvaire, La famille Carmettes, L'Abbé Jules,* and *Sébastien Roch,* and later *Le jardin des supplices, Le journal d'une femme de chambre, Les vingt-et-un jours d'un neurasthénique,* and *La 628-E8.* Mirbeau's chief dramatic work was *Les affaires sont les affaires* (1903), a comedy of character comparable to Molière. His first play, *Les mauvais Bergers,* deals with the conflict between capital and labor. It was followed by *L'épidémie, Vieux ménages, Le portefeuille, Scrupules,* and *Le foyer,* with Nathanson. He also wrote many articles and reviews for leading journals.

MISSIONS, Diplomatic and Foreign, to U. S. See United States and the War.

MISSISSIPPI. Population. The population of the State in 1910 was 1,797,114, and on July 1, 1917, it was estimated to be 1,976,570.

Agriculture. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	4,100,000	84,050,000	$115,989,000
	1916	8,400,000	47,600,000	46,648,000
Wheat ..	1917	14,000,000	210,000	630,000
	1916	6,000,000	90,000	158,000
Oats	1917	300,000	5,700,000	5,358,000
	1916	350,000	6,300,000	4,662,000
Rice	1917	2,100	68,000	120,000
	1916	1,900	53,000	42,000
Potatoes .	1917	14,000	1,092,000	1,835,000
	1916	12,000	780,000	1,248,000
Hay	1917	261,000	*a* 371,000	5,676,000
	1916	275,000	385,000	4,235,000
Cotton ..	1917	2,801,000	*b* 895,000	127,538,000
	1916	3,110,000	812,000	88,209,000

a Tons. *b* Bales of 500 pounds gross weight.

Transportation. The railway mileage of the State in 1916 was 4351. There was no construction during the year.

Finance. The latest year for which statistics are available is 1915. In that year the receipts amounted to $3,873,254, and the disbursements to $4,248,109. There was a balance at the beginning of the year of $636,708, and at the end of the year of $261,362. The bonded debt of the State is $2,500,000.

Education. The number of school children in the State in 1916 was 788,927. Considerably over half of the children of school age in the State are colored. In addition, there are about 400 Indian children of school age. The State has no compulsory school law.

Charities and Corrections. The charitable and correctional institutions of the State are under the control of the State board of charities and corrections. They include the State Prison, Institute for the Blind, Institute for the Deaf and Dumb, and Charity Hospital, all at Jackson. There are also hospitals at Vicksburg and at Natchez.

Politics and Government. The legislature met in its biennial session in 1917, but enacted no measures of more than local importance.

State Officers. Governor, Theo. G. Bilbo; Lieutenant-Governor, Lee M. Russel; Secretary of State, J. W. Power; Treasurer, J. P. Taylor; Auditor, Robert E. Wilson; Adjutant-General, E. G. Scales; Superintendent of Education, W. F. Bond; Attorney-General, Ross A. Collins; Land Commissioner, M. A. Brown, Commissioner of Agriculture, P. P. Garner; Commissioner of Insurance, T. M. Henry—all Democrats.

Judiciary. Supreme Court: Chief Justice, S. Smith; Associate Justices, S. C. Cook, J. Morgan Stevens, E. O. Sykes, J. B. Holden, George H. Ethridge; Clerk, George C. Myers.

MISSISSIPPI, University of. A co-education State institution of learning located at Oxford, Miss. In the fall of 1917 there were 402 students and 31 members of the faculty; in the year about 50 students and 3 members of the faculty were in government service. Volumes in the library numbered 31,000. A school of commerce and business administration and various courses to prepare men and women for war service were added in 1917. Productive funds amounted to about $700,000 and the income to $42,000. The university was founded in 1844. President, Joseph Neely Powers, LL.D.

MISSISSIPPI DAM. See Dam.

MISSISSIPPI RIVER. See Canals.

MISSOURI. Population. The population of the State in 1910 was 3,294,335, and on July 1, 1917, it was estimated to be 3,429,595.

Agriculture. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	7,200,000	252,000,000	$287,280,000
	1916	6,775,000	132,112,000	118,901,000
Wheat ..	1917	1,800,000	27,540,000	58,703,000
	1916	1,950,000	16,675,000	27,849,000
Oats	1917	1,480,000	59,200,000	36,112,000
	1916	1,290,000	32,250,000	17,092,000
Rice	1917	400	18,000	34,000
	1916	200	10,000	10,000
Potatoes .	1917	109,000	9,483,000	12,992,000
	1916	91,000	5,460,000	9,828,000
Hay	1917	3,180,000	*a* 3,657,000	63,998,000
	1916	3,410,000	4,438,000	41,227,000

		Acreage	*Prod. Bu.*	*Value*
Tobacco	.1917	3,000	*b* 2,820,000	598,000
	1916	3,200	3,040,000	456,000
Cotton	..1917	140,000	*c* 51,000	7,012,000
	1916	188,000	63,000	5,956,000

a Tons. *b* Pounds. *c* Bales of 500 pounds gross weight.

Mineral Production. The production of silver, copper, lead, and zinc in the State in 1916 was valued at $74,143,607, compared with $53,683,420 in 1915. Lead is the most important mineral product in point of value. The value of the lead mined increased $12,384,784 so that the largest increase in the total value was caused chiefly by the much larger output under higher prices of lead in 1916 compared with 1915. The total production of lead was 233,088 tons in 1916, compared with 210,440 in 1915. In 1916 the value was $32,166,144, compared with a value of $19,781,360 in 1915. The zinc produced in 1916 was 155,960 tons, valued at $41,797,280 compared with 136,300 valued at $33,802,400 in 1915.

The coal output increased from 3,811,593 net tons in 1915, valued at $6,595,918, to 4,742,146 tons, valued at $9,044,505, in 1916. This is a record production for the State.

Transportation. The total railway mileage of the State in 1917 was 9364. The railroads having the longest mileage were: St. Louis and San Francisco, 1719; Chicago, Burlington, and Quincy, 1135; Chicago and Alton, 1052; Missouri Pacific, 1013.

Finance. The report of the State treasurer for the fiscal year 1917 shows the receipts to be $15,585,244. The expenditures during the fiscal year were $16,102,946. There was a balance on hand on January 1, 1917, of $3,508,843 and on January 1, 1918, the balance on hand was $2,991,111. The bonded indebtedness of the State amounted to $2,384,000.

Education. The latest statistics available for education are those of 1915. In that year the enrollment in the public schools was 711,355. The total number of students of school age was 922,731. The average daily attendance was 528,153. The total number of teachers was 19,826. The average annual salary of male teachers was $603, and of females $511. The total amount of payments for educational purposes during the year was $19,700,000.

Charities and Corrections. The charitable and correctional institutions of the State are under the supervision of the State Board of Charities and Corrections. They include hospitals at Fulton, St. Joseph, Nevada, and Framington, Industrial School for Boys at Boonville, Colony for Feeble-Minded and Epileptics at Marshall, Missouri School for the Deaf at Fulton, Missouri School for the Blind at St. Louis, Federal Soldiers' Home at St. James, Confederate Soldiers' Home at Higginsville, State Sanatorium at Mount Vernon, and State Penitentiary at Jefferson City.

Politics and Government. The legislature met in its biennial session in 1917, but enacted no measures of more than local importance.

Legislation. Among the more important measures passed at the legislative session of 1917 are those noted below.

Laws relating to criminal procedure were amended in important respects. Capital punishment was abolished. Amendments were made to the laws relating to the administration of estates. Provision was made for the voting of citizens absent on military service. Additional provision was made for the voting of trainmen and traveling salesmen at primary elections. It was forbidden to publish campaign matter anonymously. Amendments were proposed prohibiting the importation of alcoholic liquors. The inspector of beers is required to inspect all so-called "soft drinks." An income tax was created, modeled largely upon the Federal income tax. Other changes were made in the laws relating to taxation. The laws relating to banking were amended in important details.

State Officers. Governor, Frederick D. Gardner; Lieutenant-Governor, Wallace Crossley; Secretary of State, John L. Sullivan; Auditor, George E. Hackmann; Treasurer, George H. Middelkamp; Attorney-General, Frank W. McAllister; Superintendent of Education, Vel W. Lamkin—all Democrats.

Judiciary. Supreme Court: Chief Justice, Archelaus M. Woodson; Associate Justices, Walter W. Graves, Robert F. Walker, Charles B. Faris, H. W. Bond, James T. Blair, Fred L. Williams; Clerk, Jacob D. Allen.

MISSOURI, University of. A co-educational State institution of learning, located at Columbia, Mo. In the fall of 1917 there were 2061 students and 257 members of the faculty. Volumes in the library numbered 200,000. Productive funds in 1917 amounted to $1,311,339 and the income therefrom to $65,900. The university was founded in 1839. President, Albert Ross Hill, LL.D.

MODERN SCHOOL. The institution much discussed under this title in the newspapers and magazines of the United States during 1916 and 1917 is the Lincoln School of Teachers College, briefly described under Education in the United States and Columbia University.

MOLDAVIA. A former principality, now the northern division of Rumania. On the west are Transylvania and the Bukowina; on the northeast and east, the Russian government of Bessarabia, from which Moldavia is separated by the Pruth River. The area of Moldavia is stated at 14,759 square miles, which is a little larger than the combined areas of Massachusetts, Rhode Island, and Connecticut. Population, 2,145,464, according to the census of January 1, 1913. The old capital of Moldavia was Jassy (Iashi), which, when the government fled before the German advance late in 1916, became the temporary capital of Rumania. Prior to the great war, Jassy had 76,120 inhabitants; Galatz (Galatsi), 72,512; Botushani, 32,874; Bârlad, 25,367; Focshani, 25,287; Bacau, 19,000; Piatra, 19,000.

MOLECULAR PHYSICS. See Chemistry.

MOLLENHAUER, Emil. See Music, *Orchestras.*

MOLYBDENUM. See Chemistry, Industrial; Metallurgy.

MONACO. A hereditary constitutional monarchy (constitution of January 8, 1911), covering 1.5 square kilometres and having a population in 1913 of 22,956. Population of Monaco (town), 2247; of La Condamine, 11,082; of Monte Carlo, 9627. Roman Catholicism is the only creed tolerated. The revenue, derived chiefly from the gambling concession at Monte Carlo, is spent largely for improvements. Reigning Prince, Albert (born November 13, 1848); heir-apparent, Prince Louis (born July 12, 1870).

MONEY. The total stock money in the United States on October 1 was $5,597,367,000, as compared with $4,699,389,000 on October 1, 1916, or an increase during this single year of nearly $900,000,000. These totals may be compared with $4,482,000,000 on June 30, 1916; $3,989,000,000 on June 30, 1915; $3,738,000,000 on June 30, 1914, and $3,419,000,000 on June 30, 1910. Thus, during the somewhat more than three years since the beginning of the war, money in circulation in the United States, including coin, bullion in the treasury, bank notes, and United States notes, had expanded by the enormous sum of nearly $2,000,000,000. The money in circulation on October 1, 1917, amounted to $4,820,546,000, an increase of $642,000,000 over one year earlier. The amount in circulation on June 30, 1915, was $3,569,000,000 and on June 30, 1914, $3,402,000,000. The per capita circulation increased from $34.35 on June 30, 1914, to $35.44 on June 30, 1915, to $39.29 on June 30, 1916, and to $46.10 on October 1, 1917. These changes were due fundamentally to the remarkable volume of gold imports (see Financial Review). This not only increased the money supply directly but furnished a basis for a great expansion of bank note issues. This latter moreover was demanded by the increase in prices (for which in turn the greater circulation was partly responsible) and by the great industrial prosperity of the country; and was made possible by the security and confidence in financial circles obtained through the Federal Reserve System.

Paper currency in the United States at the close of the fiscal year 1917 amounted to $4,209,000,000 according to the *Report* of the treasurer of the United States. Of this sum the government has issued directly $2,934,000,000 and the banks $1,275,000,000. The most notable change in the paper currency was the increase in the amount of $1 and $2 bills. In spite of every effort to increase their supply there was still a scarcity of them. It was expected that an act of October 5 authorizing national banks to increase their circulation of $1 and $2 bills would meet this deficiency. The total amount of United States notes or "greenbacks" was, as previously, $346,681,016. Of the Treasury Notes of 1890 only $1,976,000 were still outstanding. The paper currency included gold certificates of $1,584,000,000. Efforts were made in the latter half of the year to reduce their circulation. Silver certificates were outstanding on June 30 to the amount of $477,184,000. The standard silver dollars in the American monetary system on June 30 numbered $568,269,000, of which $71,825,000 were in circulation and the remainder in the treasury. Subsidiary silver coin to the value of $198,274,000 was included, nearly all in circulation. Minor coins totaled $73,337,000.

MONGOLIA. A Chinese dependency west of Manchuria and between China proper and Sinkiang, on the south, and Siberia, on the north. Estimated area, 1,076,292 square miles. Estimated population, 1,800,000. Higher estimates for both area and population are published. In November, 1917, it was announced that the Chinese government had under consideration the delimitation of the proper boundary between Inner Mongolia, the southern part of the country, and Outer Mongolia, the northern part. Soon after the outbreak of the Chinese revolution Outer Mongolia declared its independence and proclaimed the Hutuktu as emperor. Its autonomy was recognized by Russia and was further supported by a Russo-Mongolian convention signed at Urga November 3, 1912. On November 5, 1913, an agreement was reached at Peking between China and Russia whereby China recognized the autonomy of Outer Mongolia and Russia recognized Chinese suzerainty therein. Both China and Russia agreed not to colonize Outer Mongolia and not to send troops there other than as consular or official guards. Outer Mongolia is administered by the emperor, Jebtsum Dampa Hutuktu (Venerable Sacred Saint), who is assisted by a cabinet of ministers. The Chinese executive officials for Outer Mongolia are Chen Yu, resident-general at Urga, and Chang Ching Tung, Liu Chung Hui, and En Hua, deputy residents-general at Khiakta, Kobdo, and Uliasutai respectively.

MONITORS. See Naval Progress.

MONTANA. Population. The population of the State in 1910 was 376,053, and on July 1, 1917, it was estimated to be 472,935.

Agriculture. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	81,000	1,012,000	$1,771,000
	1916	74,000	1,850,000	1,720,000
Wheat ...	1917	1,727,000	17,963,000	34,489,000
	1916	1,485,000	28,655,000	46,134,000
Oats	1917	680,000	13,600,000	11,016,000
	1916	660,000	25,080,000	11,788,000
Potatoes .	1917	57,000	155,000	5,523,000
	1916	39,000	5,415,000	5,850,000
Hay	1917	759,000	*a* 1,063,000	19,772,000
	1916	825,000	1,402,000	15,422,000

a Tons.

Mineral Production. The value of the output in gold, silver, copper, lead, and zinc in 1917 was nearly $113,000,000, a decrease from 1916 of over $20,000,000. There was a marked decrease in the output of all metals except lead. The mined output of gold was valued at $3,371,000, a decrease from $4,550,494 in 1916. The output of silver decreased from 16,494,366 ounces in 1916 to 12,788,000 in 1917. The value in spite of increased prices decreased from $10,853,293 to $10,358,000. The mined production of copper decreased from 352,928,373 pounds in 1916 to 278,000,000 pounds in 1917, or a decrease of nearly 75,000,000 pounds. This decrease in value was proportionately less owing to the unusually high price from $86,820,380 to $81,000,000. The mined output of lead increased from 13,595,136 pounds in 1916, to 17,000,000 pounds in 1917, a gain of over 3,000,000 pounds. The value of the output was $936,064 in 1916. The mined production of zinc decreased from 229,259,075 pounds in 1916 to 180,000,000 in 1917, a decrease of nearly 5,000,000 pounds. The value of the output in 1916 was $30,720,716. The mining of metal in 1915 was a record for the State.

The coal production of the State in 1916 was 3,632,527 short tons, valued at $6,286,197, which was an increase of 30 per cent in quantity, or 39 per cent in value over 1915. There were employed in the coal mines of the State in

1916 3781 men, compared with 3158 in 1915.

Montana is an important source of high-grade manganese ore. The shipping in nine minths, from January to September, 1917, amounted to 33,859 gross tons, compared with shipments of 3268 tons in the twelve months of 1916.

TRANSPORTATION. The total railway mileage in the State on December 31, 1916, was 6678. The longest mileage owned is by the Great Northern Railway—2154; the longest mileage operated is by the Northern Pacific Railway, 2234.

About one hundred miles of new track were constructed during the year.

FINANCE. The receipts for the fiscal year 1914, the latest for which statistics are available, were $5,550,909, and the disbursements amounted to $5,207,011. At the beginning of the year there was a balance of $1,039,749, and at the end, of $1,383,646.

EDUCATION. The number of pupils enrolled in the schools in 1914, the latest for which statistics are available, was 85,782. Of these 43,046 were males, and 42,736 females. The average daily attendance was 62,686. The total number of children of school age in 1913, the latest date on which a census was taken, was 114,032. The total number of teachers was, in 1914, 3778, of whom 3252 were females, and 526 males. The average monthly salary of male teachers was $93.29, and of females, $75.55. The expenditure for school purposes during the year was $6,951,903.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the State Prison at Deer Lodge, the State Industrial School at Miles City, a Home for Orphans, Foundlings and Destitute Children at Twin Bridges, a Soldiers' Home at Columbia Falls, the State Hospital for the Insane at Warm Springs, and the State School for the Deaf and Blind and Feeble-Minded at Boulder.

POLITICS AND GOVERNMENT. On June 8 an explosion and fire in Butte caused the death of more than 100 employees.

On August 2 Frank Little, an organizer and agitator of the Industrial Workers of the World, was lynched at Butte. He had come into the State for the purpose of organizing a strike in the metal mines. In connection with this order, he denounced the army and Federal government, declaring that if the government took control of the mines, the situation would be made so difficult that it would be impossible to send troops to France. The State authorities were at the point of persecuting him for these utterances, when seven men went at night to his lodgings and took him in an automobile to a railroad trestle on which they hanged him. See STRIKES.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below.

The laws relating to the administration of justice and the organization of courts were amended in important detail. Attorneys were required to pay an annual license tax or fee, and a penalty of $25 was imposed for practice without a license. Measures were passed regulating the manufacture, storage, and handling of explosives. The possession of a shell or bomb is considered as evidence that the possessor intended to use it for unlawful purposes, and the law provides for his punishment. Cities were authorized to adopt a commission form of government. A law was passed relating to the enforcement of prohibition laws, which applies to every liquid capable of use as a beverage which contains 2 per cent in volume of alcohol, and applies prohibition to the "ardent spirits, or any compound thereof, capable of use as a beverage."

Provisions were made for the regulation in detail of the construction and maintenance of electrical apparatus employed in manufacturing or mining. An eight-hour law for women was adopted in a large number of employments. Measures were passed relating to the prevention of monopolies and unfair discrimination in the buying and selling of food products in different parts of the State. The payment of a license of $6000 is required for the giving of premiums or bonuses in the selling of merchandise. The laws relating to taxation were amended in important details. A temporary tax and license investigation committee was created.

STATE OFFICERS. Governor, Samuel V. Stewart, Dem.; Lieutenant-Governor, W. W. McDowell, Dem.; Secretary of State, A. M. Alderson; Treasurer, H. L. Hart, Rep.; Auditor, William Keating, Dem.; Adjutant-General, Phil. Greenan, Dem.; Attorney-General, S. C. Ford, Rep.; Superintendent of Education, May Trumper, Rep.; Commissioner of Insurance, the State Auditor.

JUDICIARY. Supreme Court: Chief Justice, Theo. Brantly; Justices, Sydney Sanner, Wm. L. Holloway; Clerk, J. T. Carroll.

MONTANA, STATE UNIVERSITY OF. A co-educational State institution of learning at Missoula, Mont. In the fall of 1917 there were 549 students and 70 members of the faculty. Volumes in the library numbered 60,000. At the opening of the fall 1917 term a change was made from the semester to the quarter year plan. The university was founded in 1892. E. O. Sisson assumed duties as president in August, 1917, succeeding acting-president, F. C. Scheuck.

MONTENEGRO. One of the lost small nations, submerged in the flood of the German invasion. A European monarchy, hereditary and constitutional; a Balkan state, lying between northern Albania on the south and Herzegovina on the north. Area, 9080 square kilometres (3506 square miles); population, 285,000 (31 per square kilometre). These figures relate to area and population previous to the Balkan Wars; by the terms of the treaty of November 12, 1913, defining the Serbo-Montenegrin frontier, Montenegro came into possession of new area, estimated at 2130 square miles, carrying a population of about 150,000. The Montenegrins belong to the Serbian branch of the Slav race. The majority of the original population are of the Orthodox Church. Cettinje (5300 inhabitants) is the capital; Pedgoritza had 10,053, Dulcigno 5081, Antivari 2317. Montenegro is a mountainous, wooded country, with cultivable tracts where agriculture is carried on. Chief products are corn, potatoes, sumac, cattle, castradina (smoked mutton), hides, and tobacco, which was created a monopoly, and conceded for twenty-five years to an Italian company.

Reigning sovereign, Nicholas I (born 1841), father of the Queen of Italy. Heir-apparent, Prince Danilo (born 1871). The government was transferred, when Cettinje became untenable, to Bordeaux, France; and was later removed to Neuilly-sur-Seine. See WAR OF THE NATIONS.

MONTGOMERY, DAVID. An American comedian, died in Chicago, April 20, 1917. He was born in St. Joseph, Mo., in 1870. The famous partnership of Montgomery with Fred Stone was formed after they had met in 1894 in Galveston, Tex. Stone was member of a stock company there, when Haverley's Minstrels, among whom was Montgomery, came to town. Stone cast his lot in with the minstrels, and when they disbanded, shortly after, the two comedians, who had not yet been "discovered" but had discovered each other, stayed together. They played in New Orleans, then in Chicago, and finally got to New York, where they made their début at the old Miner's Bowery Theatre. It wasn't long after that that they were receiving $200 a week at Hammerstein's. Charles Frohman presented them in *The Girl From Up There,* and they went to London, where they had already been once, in this play. In their later years of success Charles B. Dillingham was their manager. The show that started them on the road to one of the most extraordinary of stage careers was *The Wizard of Oz,* in 1903. Their New York run and tour of the country in this piece kept them busy three years, and they duplicated this record in the succeeding plays, which, as presented by this pair, provided hilarious amusement for hundreds of thousands. They were *The Red Mill, The Old Town, The Lady of the Slipper,* to which Elsie Janis contributed, and *Chin Chin.* During all these years Dave Montgomery and Fred Stone were not only business partners, but the closest of friends. Each seemed indispensable to the other, though Montgomery himself recognized that his comic gift was not equal to Stone's. These two knew how to be funny without being vulgar.

MONTSERRAT. A presidency of the Leeward Islands (q.v.).

MOODY, WILLIAM HENRY. An American public official and jurist, born on December 23, 1853, died July 2, 1917. He graduated from Harvard University in 1876 and was district attorney for the Massachusetts Eastern District from 1890 to 1895. He served several terms in Congress and made a great reputation as a parliamentarian. He was secretary of the navy under President Roosevelt from 1902 until 1904, succeeding J. D. Long. In 1904 he became Attorney General and in 1906 was appointed Associate Supreme Court Justice of the United States, succeeding Associate Justice Brown, who retired. Justice Moody was retired by a special act of Congress in 1910 on account of ill health. Among the noted opinions he rendered during his brief stay on the bench were the Knoxville Water Company and the Consolidated Gas Company decisions.

MORAVIA. A crownland of Austria. On the west is Bohemia; on the south, Lower Austria; on the northeast, Silesia; on the southeast, Hungary. The area is 8580 square miles, which is a little larger than the State of Massachusetts. The population at the census of December 31, 1910, was 2,622,271 (about 9.18 per cent of the total for Austria), as compared with 2,437,706 in 1900. In 1910, the number of Austrian subjects was 2,604,857; of these, Bohemian, Moravian, or Slovak (which are almost identical) was the vernacular of 1,868,971 (71.75 per cent); German, 719,435 (27.62); Polish, 14,924 (0.57). Catholics numbered 2,502,808, or 95.45 per cent of the population. Brünn, the capital, had 125,737 inhabitants in 1910. Moravia has a diet of 151 members. The crownland is represented by 49 members in the Austrian Reichsrat.

MORAVIANS, also called MORAVIAN BODIES, UNITED BRETHREN (Unitas Fratrium), and MORAVIAN CHURCH. There are two bodies of this denomination in the United States, only one of which is important numerically. The smaller body is called the Union Bohomeian and Moravian Church. It had in 1917, 4 ministers, 21 churches, and 1000 communicants. The main body, the Moravian, had, in, 1917, 144 ministers; 126 churches; and 20,859 communicants. Missions are maintained in nearly all parts of the world, and the educational institutions under the control of the Moravian have a high reputation for efficiency. The latter include the Moravian College and Theological Seminary, the Moravian Parochial for Boys and Girls, and Moravian Seminary and College for Women at Bethlehem, Pa., Linden Hall Seminary for Girls at Latitz, Nazareth Hall for Boys at Nazareth, Pa., and an Academy for Girls and a college for women at Salem, N. C. The Moravians are strongest in Pennsylvania.

MÖRNER, KARL AXEL HAMPUS, COUNT. A Swedish physician and chemist, died in May, 1917. Born at Ljusnarsberg, Örebro, Sweden, in 1854, he studied at the University of Upsala, and in 1884, the year that he became medical licentiate of the Karolinska Medico-Chirurgical Institute, he was appointed to teach chemistry and pharmacy in the institute. Two years later he became ordinary professor of these subjects and a doctor of medicine. Since 1897 he had served as director of the institute. Count Mörner held the important post of president of the committee charged with awarding the annual Nobel prize in medicine. He himself received the Alvarenga prize in 1895. His researches and publications dealt with physiologic chemistry, toxicology, and chemical analysis.

MOROCCO. An African sultanate chiefly under French protection. The largest of the Barbary States, situated in the northwestern part of Africa, between 27°-36° N. lat. and 1°-11° 40′ W. long, made up of the kingdom of Fez and Morocco, to the north of the Atlas, and the territories of Sûs, Drâ, Wadi Tafilet, Tuat, and others to the south, which are again subdivided into 33 districts, each under the superintendence of a "Kaid"; the semi-independent tribes are ruled by their own chiefs, and scarcely acknowledge the authority of the sultan. The area of the protectorate is given at 416,800 square kilometres, with an estimated population of 3,000,000. The Spanish concessions cover about 21,800 square kilometres, with about 404,000 inhabitants; Tangier, which is to be internationalized, has 600 square kilometres, and 60,000 inhabitants. Fez is the capital, with 101,820 inhabitants; Morocco (Marakesh), 60,034; Rabat, 47,144; Tangier, 46,270. The inhabitants are chiefly Berbers, Bedouins, and Mued-Arabs and Tuaregs, and belong to the Malekite sect of the Sunnite Mohammedans.

Among the chief products of the country are wheat, barley, corn, beans, peas, oil, esparto, and hemp; among fruits, the fig, almond, pomegranate, lemon, olive, orange, and date are common; but agriculture is greatly neglected. Morocco is said to be rich in mineral treasures;

antimony, iron, coal, copper, lead, tin—the last three in considerable quantities. Gold and silver are also found. The chief ports are Tetuan, Tangier (where the representatives of foreign nations reside), El Araish (Laraiche), Rabat, Casa Blanca (or Dar-al-baida), Mazagan, Saffi, and Mogador.

In 1917 there were in existence 773 kilometres (480 miles) of railway in Morocco, lines actually operating and exclusive of railways under construction. These lines were narrow-gauge (60 centimetres, or 2-ft. gage) military railways which up to the outbreak of the war in 1914, owing to diplomatic conventions with Germany, could not be used for civilian or ordinary traffic. Free from all diplomatic conventions made with Germany, the French government opened all lines to ordinary traffic. The traffic receipts per kilometre for the whole of 1916 varied between £740 ($3626) and £935 ($4582). In 1917 there was before the French parliament a bill for a proposed Tangiers-Fez line of standard gage. The French government proposed to give a concession for the whole of the standard gage lines under construction or to be constructed (altogether 670 miles) to a private corporation.

Telegraphic communication from Tangier is by submarine cable of Eastern Telegraph Company to Gibraltar, by Spanish government telegraph to Tarifa, and by French cable to Oran (Algeria); there are wireless stations at Tangier, Rabat, Casa Blanca, and Mogador. The principal exports (1915) were barley, £532,392; wheat, £237,652; wool, £164,358; eggs, £251,055; almonds, £181,648. Imports were cottons, £1,517,534; sugar, £2,423,667; tea, £435,934; hardware, £348,216; flour, etc., £946,869. Total imports, 1915, £10,867,410; exports, £2,561,995.

Reigning sultan, Mulai Yussuf, son of Mulai Hassan; proclaimed at Fez August 17, 1912, in place of his brother, Mulai Abd-el-Hafid. There is a French resident commissioner-general; a Spanish high-commissioner resides at Tetuán.

History. It became known, January 16, 1917, that the United States was ready to recognize the French protectorate of Morocco, and the State Department had prepared a note, which was ready to be transmitted to the Paris Foreign Office. The extra-territorial rights which this country enjoyed under treaty with Morocco were not surrendered, but the exercise of them was suspended. The question of the recognition of the French protectorate had been a subject of negotiation since 1912.

When the war broke out there was great anxiety as to its effect upon the unruly tribes in Morocco and many called to mind the fact that the massacres of Fez had occurred no longer ago than April, 1912; that Morocco was far from being completely conquered, that few French colonists had settled in it and that, moreover, it had been undermined everywhere by German intrigues. In spite of this, Morocco remained firmly loyal and the French were not obliged to send all their effective troops to reenforce the army there. On the contrary, a large part of the Moroccan forces were brought back to France where these regiments on many occasions distinguished themselves in battle. Moreover. thousands of the Moroccans had voluntarily joined the French at the front and their quality was shown by the large number of military medals and crosses of war that they had won. Further than that, Berber peasants were cultivating French lands and Moroccan workingmen were employed in French factories. To these gains should be added the economic support which Morocco had given France. Between August, 1915, and June, 1916, Morocco had sent more cereals to France than Algeria and Tunis put together, that is to say, about two million quintals. In 1917, though the exact figures were not at that date available (June 19, 1917), the Moroccan contribution had increased still more in spite of unfavorable weather conditions, insect pests, etc. Two million quintals were enough to supply bread to France for two months and in addition to that Morocco exported great quantities of wool, goatskin, and sheepskin. In commenting on these conditions the press praised highly the intelligent administration of the governor, M. Grandclément as well as the effective work of the officials in charge of the agricultural department. The latter had put into force very effective means for increasing the output; for example, the foundation of native provident societies whose members received free seed; the supply of farm implements for the purpose of assuring a greater production; the supply of motor power. The purposes of these organizations were first to increase the production by extending the area of arable land, and second to increase the productiveness of each piece of land.

The work of pacification and reorganization was carried vigorously forward under Gen. Lyautey in the latter part of the year. In general his policy was to destroy none of the country's institutions and to respect not only the religion but the customs and even prejudices of the natives; not to assume the attitude of a conqueror, but that of a collaborator; to show respect to the sultan, and not to resort to force when other means were possible. A great fair was held at Rabat, the third since the war broke out, and there were many evidences of the prosperity of the country and of good feeling between natives and Europeans. The French forces kept a close watch on the malcontents such as Abd-el-Malek in the north and El-Hiba in the south, and also on those tribesmen whom the German agents had stirred up against the French. Relations with Algeria were satisfactory.

MOTHERS' PENSIONS. See Pensions for Mothers.

MOTOR BOATING. See Yachting.

MOTOR SPIRIT. See Chemistry, Industrial.

MOTOR VEHICLES. See Automobiles.

MOULTON, James Hope. An English theologian, died from exposure in April, 1917, after the ship on which he was homeward bound from a missionary tour to India had been sunk. He belonged to a distinguished family, his father being William F. Moulton, theologian and educator, one uncle, Lord Moulton, jurist, and another uncle, Richard Green Moulton, the American literary scholar. J. H. Moulton was born at Richmond College, where his father was then professor, in 1863, and his earlier education was obtained at the Leys School, Cambridge, founded by his father. Here he served as master from 1886 to 1902, lecturing on classics at the same time at Girton and Newnham Colleges. Professor Moulton was a graduate of King's College, Cambridge, of which he was elected fellow in 1888. As early as 1886 he became a Wesleyan minister, and in 1902 he was appointed tutor in the Wesleyan College at Didsbury. From 1908 till his death, in addition, he held the Greenwood professorship of Hellenistic Greek and Indo-European philology in the University of Manchester. London University awarded him a gold medal in classics and gave him the degree of D.Lit., and he received the D.D. from Edinburgh, the D.C.L. from Durham, and D.Theol. from Berlin and Groningen. Professor Moulton was author of contributions to scholarly journals, of the article on Zoroastrianism in Hastings's *Dictionary of the Bible*, and of: *Grammar of New Testament Greek*, *Early Religious Poetry of Persia*, *Early Zoroastrianism* (Hibbert Lectures, 1912), *Religions and Religion* (Fernley Lecture, 1913), *Vocabulary of the Greek Testament* (Parts I and II, 1914-15, with Prof. Milligan).

MOUNT HOLYOKE COLLEGE. A non-sectarian institution for the education of women at South Hadley, Mass. In the fall of 1917 there were 858 students and 149 members of the teaching and administrative staffs. Volumes in the library numbered 64,208. Late in 1917 the science building containing the laboratories of the departments of zoölogy, botany, physiology, geology, and psychology was burned to the ground and valuable equipment and the contents of several museums were lost. During 1917 about $30,000 was received as gifts. Productive funds amount to $104,212 and the income to $67,259. Mount Holyoke was founded as a seminary but was chartered as a college in 1888. President, Miss Mary Emma Woolley, Litt.D., L.H.D., LL.D.

MOUNT WILSON SOLAR OBESRVATORY. See ASTRONOMY.

MOVING PICTURES. The activities concerned with the moving picture business showed a moderate but steady growth in 1917. It was of course affected to a certain extent by the habits of economy that began to be practiced by the public soon after the United States entered the war. Later in the year, after the enactment of the war tax legislation, the fear of the managers that the added price of the tax on admission tickets would act as a deterrent to the patronage of moving picture theatres was not justified to any marked extent, although reports from certain quarters were quite pessimistic in this regard.

As to productions, there were few novelties brought out; and although the amount of new film shown was very large, the subjects treated were just about the same in range as those of the previous year. Romance, adventure, comics, the sex play, history, and current events all had their share of publicity before audiences that evinced the never-failing kind of interest aroused by presentation on the screen. Of course, the war's influence was marked, not only by the exhibition of films showing the various activities of the armies in Europe, but also the organization, training, and routine of the large bodies of men at the cantonments in the United States and drilling and evolutions in the navy and marine corps. These and other patriotic subjects were usually included in the weekly "topical revues" issued by several producing companies that specialized in films news service. It is difficult, however, to correctly estimate the most popular type of scenario presented for public view. The play depicting the adventurous features and scenes of ranch and border life maintained its popularity to a remarkable degree, as did also the detective play, and that which appealed to the spirit of activity and adventure in every phase of life. Then, too, the scenario that is alleged to convey a great moral lesson by pointing out the inevitable punishment that overtakes the criminal or the equally certain bad results that are attained by the man or woman who transgresses the conventions of society still seemed to have an eager public following. Of dramatizations of historical characters and of standard works of fiction there were many, some well done, others merely adaptations to suit modern conditions, possibly with a view to securing greater public appreciation.

One of the notable features of the year was the evidence of the separation of the ideals, objects, and limitations of the film play and the spoken drama respectively. Whereas a few years ago the rapidly increasing popularity of moving pictures and the concurrent commercial importance of such undertakings caused some uneasiness and apprehension on the part of the producers of the legitimate drama, the latter no longer entertain any fears that the "movies" will supplant the "legitimate" in popular approval. The experience in both these lines of effort during 1917 made certain what was becoming increasingly evident before that year that each form of entertainment occupied its own field apart and distinct from the other, each catering to a certain extent to the same class of the public, yet to a larger extent having followers and devotees of its own. It became definitely settled that the spoken drama will not soon be displaced by the film play. Each constitutes a different form of expression and each has its sphere of action and appeal.

The better class of moving picture theatres were increasingly notable for their improved design and modern, fireproof construction comprising better seating arrangements and heating in addition to varied lighting effects that leave little to be desired by patrons. There was also a marked improvement in the quality of music furnished, it being usual in such theatres to maintain permanent orchestras with highly competent conductors. In addition to carefully selected incidental music accompanying the screen presentations, a more or less extensive musical programme was commonly offered.

The photography of the films produced in 1917 was even better than was observed formerly, the skillful work of experienced camera men and operatives contriving to successfully carry out the endeavors of producers and directors.

There was an encouraging increase in the use of moving pictures for educational purposes. In addition to a long series of films showing manufacturing processes and operations, it was increasingly common for educational institutions of all grades to use them for instruction in all branches of science and technology, thus giving added interest to the subjects taught. At the various army cantonments the great value of the films as a means of entertainment and instruction for thousands of soldiers was soon recognized.

This sort of entertainment was modified so as to prove highly instructive to these large bodies of men by showing many phases of military activity both along the battle front in Europe and in transport, sanitation, and routine work at the cantonments. Brief talks by officers and other experts were a frequent accompaniment of these moving picture demonstrations.

Concerning the personal side of moving picture drama, the recent development of the film play brought out well marked tendencies of histrionic technique. Thus the successful film star made use of many arts and mannerisms not called for in the spoken drama. Experience had demonstrated the difference in the requirements of the two kinds of acting. Many men and women who had attained success before the moving picture camera could never properly impersonate an important part in a spoken play, and the reverse, as is well known, has often proved to be the case; that is, that many successful actors made failures in endeavoring to act for the movies. Conditions have therefore formed two almost distinct types of actor, and it seemed likely, in view of the developments of 1917, that the distinction would continue to be very marked.

MUCK, KARL. See MUSIC, *Orchestras*.

MUNICIPAL GOVERNMENT. Improvement in the framework of city government continued. The commission plan was still gaining in numbers, but the yearly accessions reported were small compared with a few years previously. The accessions were doubtless somewhat larger than the reports indicate, because (1) some cities were heralded as having adopted the manager plan when a complete statement would put them on the commission-manager list, and (2) the commission plan being an old story its adoption was not always reported. The largest city to adopt commission government in 1917 was Newark, N. J., which had a population of 347,000 in 1910. It voted by a large majority to accept the provision of the so-called Walsh Act, under which a large percentage of the cities of New Jersey in 1917 were governed. Other cities having over 300,000 population which had previously adopted the commission plan were Buffalo and New Orleans, with populations of 424,000 and 339,000 in 1910. Dayton, Ohio (117,000), and Grand Rapids, Mich. (113,000), are still the largest cities under the city manager plan, each of these being in the commission-manager class. Late in the year, Norfolk, Va. (67,000 population in 1910), adopted the commission-manager plan by a large popular majority, the charter following closely the new model city charter of the National Municipal League (q.v.). A city manager for New York City was advocated at length by Henry Bruere, formerly director of the New York Bureau of Municipal Research and subsequently city chamberlain of New York, in a pamphlet distributed during the year by the Municipal Reference Library of New York City. Mr. Bruere's plan was designed to relieve the mayor of New York City of executive functions, leaving him free to devote his time to matters of city policy. A mayor-manager plan was recommended for Chicago in a report by the Chicago Bureau of Public Efficiency. The mayor, city clerk, and controller would be chosen by a city council of thirty-five members (one from each ward instead of the present two), and would appoint department heads. Neither the three officials named or the department heads would have fixed terms of office. The plan would require legislative authorization. The yearly number of cities adopting the commission plea from 1901 to 1917 were as follows:

1901	1	1912	67
1905	1	1913	112
1906	..	1914	45
1907	7	1915	39
1908	5	1916	25
1909	23	1917	30
1910	66	Unknown	7
1911	96		
		Total	525

The reported 1917 accessions to the commission plan, with yearly adoptions from 1901 to 1917, and a list of 136 manager cities reported up to nearly the close of 1917 are given in the table on pages 463 and 464.

The 30 new commission cities, added to those listed in the INTERNATIONAL YEAR BOOK for 1916, brings the total number reported to 525. The apparent gain in manager cities was 36 in 1917. The New York State optional city charter law, enabling cities to choose by popular vote between several types of government, was upheld by the Court of Errors and Appeals late in the year, thus removing doubt from the city manager charters of Niagara Falls and Watertown. Lynn, Mass., and Appleton, Wis., voted to abandon the commission plan during the year and Portland, Ore., voted against abandoning it. The cities adopting commission government in 1917, according to records kept by the National Municipal League and *The American City*, were:

City	*Population—1910*
Auburn, Me.	15,064
Jemestown, N. Y.	31,297
Watertown, N. Y.	26,730
Newark, N. J.	347,469
Butler, Penn.	20,728
Petersburg, Va.	24,127
Charlotte, N. C.	34,014
Griffin, Ga.	7,478
Owensboro, Ky.	16,011
East Cleveland, Ohio	9,179
South Charleston, Ohio	....
Xenia, Ohio	8,706
Birmingham, Mich.	....
Muskegon Heights, Mich	....
Royal Oak, Mich	....
Buda, Ill.	....
Champaign, Ill.	12,421
Dallas City, Ill	....
Earlville, Ill.	....
East St. Louis, Ill	58,547
Jerseyville, Ill.	4,113
Port Washington, Wis	3,792
Herington, Kans.	3,273
Maplewood, Mo.	4,976
Bullock, Tex.	....
Clarendon, Tex.	....
Albuquerque, N. M.	11,020
Dewey, Okla.	....
Madill, Okla.	....
Santa Barbara, Cal	11,659

BOULDER'S PROGRESSIVE CHARTER. On October 30, the citizens of Boulder, Colo., adopted a commission-manager charter which, besides the common features of nomination by petition, the initiative, referendum, and recall, provided for the Hare system of preferential voting in electing members of the commission. The city manager appoints and supervises the work of the heads of the six departments of service, finance and record, health, welfare, safety, and planning and parks. The manager is appointed by the council on the merits of his executive and administrative qualifications, for an indefinite period, and he need not be a resident of Boulder. The director of service must be an engineer with training and experience in municipal work and is ex-officio city engineer. The director of health must be either a sanitary engineer or a member of the medical profession.

Conservative Home-Rule Charter of Cincinnati, Ohio. The new charter for Cincinnati, Ohio, like that for Boulder, was framed by a charter commission, and thus was of the home-rule type. The Cincinnati charter provided that the city "shall have all the powers of local self-government and all other powers possible for a city to have" under the State constitution. The city was to continue to be governed by a mayor and council, who, with an auditor, would be elected for terms of four years. The mayor was to appoint the chief executive officers. The city planning commission is described under City Planning.

Council-Commission Charter for Jacksonville, Fla. In striking contrast with the locally-framed and adopted charters of Boulder and Cincinnati, was one put through the Florida legislature in twenty-four hours, under suspension of the rules, without the knowledge of the people of Jacksonville.

The council commission charter provided an improvement over the previous system of mixed government, but did not accord with either the new commission-manager plan or the old mayor and council plan. The city was formerly governed by a mayor, a city council, a board of trustees for water-works and improvement bonds (which included a committee on public works, a board of health, and an election commission), and a park commission. Under the new charter there was to be a mayor, a council of eighteen members, and a commission of five members. The council and commission were to be elected by popular vote—eleven councilmen by wards and seven at large. The commissioners serve for four years, are paid $5000 a year each, and each must give bond for $5000. The councilmen are paid $240 a year. The chairman of the commission, who is elected by that body, serves as mayor ex-officio. The city recorder, treasurer, and judge are elected by popular vote.

All other officers than those already named are appointed by the commission, which also employs all laborers. The city council confirms the appointment of library trustees, charity commissioners, city attorney, and members of the police force, and appoints a special city auditor annually. The commission frames the annual budget and must approve all contracts and warrants. The mayor and council of 1917 hold office until June, 1919. The present council appointed the first commission, which took office on July 3.

Bibliography. The more notable works of the year included Cushman, *Excess Condemnation* (New York); James, *Municipal Functions* (New York); Wright, *American City* (Chicago). *Reviews* of the progress of municipal civil service and of budget making accounting appeared in the *National Municipal Review* for November, 1917.

CITIES AND TOWNS UNDER CITY-MANAGER GOVERNMENT

[Based on compilations by "The American City" and the National Municipal League, the former revised to November 27, 1917.]

City	*Population, 1910*	*Date in Effect*	*Salary of Manager*
Maine—1			
Auburn	15,064	....	....
Massachusetts—2			
Norwood	8,014	Jan. 1915	$3,000
Waltham	27,834	Dec. 1917	....
Connecticut—1			
Farmington	3,478	....	....
New York—5			
Newburgh	27,805	Jan. 1916	5,000
Niagara Falls	44,000	Jan. 1916	5,000
Oneida	8,317	1916	....
Sherrill	1,500	May 1916	125
Watertown	26,730	Jan. 1918	....
Pennsylvania—5			
Altoona	52,127	Jan. 1918	....
Bristol	9,256	....	2,000
Edgeworth	....	....	....
Grove City	3,674	Apr. 1916	1,500
Titusville	8,533	Dec. 1913	....
Virginia—10			
Charlottesville	6,765	Aug. 1913	600
Farmville	2,971	....	....
Fredericksburg	5,874	Sept. 1912	3,000
Graham	....	May 1916	1,500
Luray	....	....	....
Norfolk	67,452	Nov. 1917	....
Petersburg	24,127	Sept. 1920	....
Portsmouth	33,190	Sept. 1916	4,000
Staunton	10,604	Jan. 1908	1,800
Winchester	5,864	May 1916	2,000
West Virginia—4			
Charleston	22,996	May 1915	3,300
Clarksburg	9,201	....	....
Wheeling	41,641	July 1917	....
Williamson	3,561	Jan. 1916	1,800
North Carolina—9			
Durham	18,241	....	....
Elizabeth City	8,412	Apr. 1915	1,800
Goldsboro	6,107	....	....
Hickory	3,716	May 1913	1,500
High Point	9,525	May 1915	2,500
Morgantown	2,712	May 1913	900
Tarboro	4,129	Apr. 1915	1,500
Thomasville	3,877	May 1915	1,200
Warrenton	....	....	....
South Carolina—3			
Beaufort	....	Apr. 1915	2,400
Rock Hill	7,216	Jan. 1915	2,500
Sumter	8,109	Aug. 1912	3,600
Georgia—1			
Griffin	....	Dec. 1918	....
Florida—3			
Largo	....	June 1913	900
St. Augustine	5,494	July 1915	3,600
St. Petersburg	4,127	July 1916	....
Kentucky—1			
Cynthiana	3,603	Dec. 1915	900
Tennessee—3			
Jackson	15,779	....	....
Johnson City	8,502	July 1909	1,800
Kingsport	....	....	....
Ohio—10			
Ashtabula	18,266	Jan. 1916	2,500
Dayton	116,577	Jan. 1914	12,500
East Cleveland	9,179	Jan. 1918	....
Kenmore	....	....	....
Sandusky	19,989	Jan. 1916	3,600
Springfield	46,921	Jan. 1914	6,000
Tiffin	11,894	Apr. 1917	....
Westerville	....	Jan. 1916	....
Xenia	8,706	Jan. 1918	3,000
Zanesville	28,026	Jan. 1918	....
Indiana—1			
Cambridge City	....	....	....
Michigan—15			
Albion	5,833	Jan. 1916	3,000
Alpena	12,706	Apr. 1916	2,500
Benton Harbor	9,185	1916	....
Birmingham	....	Feb. 1918	....
Cadillac	8,375	Mar. 1913	2,500
Big Rapids	4,519	1914	1,200
Grand Haven	5,856	Apr. 1915	1,800
Eaton Rapids	....	....	....
Grand Rapids	112,571	Mar. 1917	10,000
Jackson	31,433	Jan. 1915	3,000
Manistee	12,381	May 1914	2,000
Muskegon Heights	....	Jan. 1918	....
Petoskey	4,778	....	....
Royal Oak	....	Dec. 1917	....
Sault Ste. Marie	12,615	Dec. 1917	....

City	*Population, 1910*	*Date in Effect*	*Salary of Manager*
Illinois—2			
Glencoe	....	Jan. 1914	2,500
Winnetka	8,168	Jan. 1915	8,000
Wisconsin—1			
Horicon	....	Apr. 1914	1,000
Iowa—11			
Alta	....	....	....
Anamosa	2,983	....	....
Bloomfield	2,280	July 1912	680
Clarinda	8,832	Apr. 1918	1,700
Chariton	8,794	....	....
Grinnell	5,036	Sept. 1916	2,400
Manchester	2,758	May 1916	1,440
Mt. Pleasant	8,874	....	....
Iowa Falls	2,797	Apr. 1914	1,500
Sac City	....	May 1917	1,000
Webster City	5,208	Oct. 1915	1,800
Minnesota—3			
Anoka	8,972	....	....
Morris	....	Jan. 1914	1,700
Pipestone	....	....	....
Kansas—4			
Abilene	4,118	June 1918	1,200
Eldorado	3,129	Mar. 1917	....
Mulberry	....	Oct. 1914	1,000
Wichita	52,450	June 1917	10,000
North Dakota—1			
Carrington	....	....	....
South Dakota—2			
Clark	....	May 1912	960
Willow Lake	....	....	....
Montana—1			
Glasgow	....	July 1916	1,200
Arkansas—2			
Bentonville	....	Sept. 1915	1,500
Hot Springs	14,434	Feb. 1917	2,500
Texas—13			
Armarillo	9,957	Dec. 1913	3,000
Ballinger	3,536	Jan. 1917	....
Brownsville	10,517	Jan. 1916	3,000
Brownwood	6,967	....	....
Bryon	4,132	....	....
Denton	4,732	Apr. 1914	2,000
San Angelo	10,321	Apr. 1916	2,500
Sherman	12,412	Apr. 1915	2,400
Taylor	5,314	Apr. 1914	2,600
Teague	3,288	Jan. 1915	1,680
Terrell	7,050	1918	2,500
Tyler	10,400	Apr. 1915	3,000
Yoakum	4,657	....	....
Colorado—2			
Durango	4,686	Mar. 1915	1,800
Montrose	3,254	Feb. 1914	1,800
New Mexico—2			
Albuquerque	11,020	Dec. 1917	....
Roswell	6,172	May 1914	1,800
Oklahoma—3			
Collinsville	....	....	....
Madill	....	....	....
Mongum	3,667	....	....
Washington—1			
Snohomish	3,244	1915	....
Oregon—1			
La Grande	4,843	Oct. 1913	2,400
California—10			
Alameda	23,383	Apr. 1917	4,000
Alhambra	5,021	July 1915	2,400
Bakersfield	12,727	Apr. 1915	3,000
Glendale	2,746	May 1914	1,800
Holtville	....	....	....
Huntington Beach	....	July 1916	2,400
San Diego	39,578	May 1915	6,000
San José	28,946	July 1916	6,000
San Rafael	5,934	Aug. 1915	2,400
Santa Barbara	11,659	Jan. 1918	....
Arizona—3			
Phoenix	11,134	Apr. 1914	5,000
Tempe	....	1915	....
Tucson	13,193	Jan. 1915	4,000

MUNICIPAL LEAGUE, National. Organized in 1894 for the study of municipal problems and the dissemination of information on the subject, the National Municipal League held its twenty-third annual meeting at Detroit, Mich., November 21-23, in conjunction with the City Managers' Association, the Conference of Bureaus of Governmental Research, and the Civic Secretaries Association. Among the reports presented at this meeting were those dealing with the city manager as a profession (Dr. Henry M. Waite, chairman), draft of a model library section (Samuel H. Ranck, chairman) State municipal leagues (Homer Talbot, Lawrence, Kans.), county government (Otto G. Cartwright, chairman), franchises (Dr. Delos F. Wilcox, chairman).

Among the subjects discussed at the meeting were the experiences of Canadian and English cities during war times, American cities during war times, effects of war on a trained public service, municipal pensions, executive or legislative budgets, consolidation of city and county governments, training city managers, getting trained men into public service, will the city manager form of government fit all cities, nonpartisan city government, and selling good government to the people.

Steps were taken to extend the league's work, and establish it upon a still more efficient basis. To that end a Survey Committee was appointed to recommend ways and means of increasing the league's income, expanding its field of efforts, and perfecting a closer coördination of its work with other associations in closely allied fields of effort. A resolution was also adopted offering the proper Federal authorities the coöperation and services of the organizations assembled for any special service which in the opinion of the Federal authorities they may be peculiarly qualified to perform.

A Conference of State Leagues of Municipalities was formed as a separate organization to meet annually in conjunction with the league.

The following officers were elected: president, Lawson Purdy, New York; vice-presidents: John Stewart Bryan, Richmond, Va.; Richard S. Childs, New York; Katherine Bement Davis, New York; Frank J. Goodnow, Johns Hopkins University; Meyer Lissner, Los Angeles; A. Lawrence Lowell, Harvard University; George McAneny, New York; Oliver McClintock, Pittsburgh; J. Horace McFarland, Harrisburg; Charles E. Merriam, Chicago; Robert Treat Paine, Boston; L. S. Rowe, Philadelphia; Charles Richardson, Philadelphia; Dudley Tibbits, Troy, N. Y.; treasurer, George Burnham, Jr., Philadelphia; secretary, Clinton Rogers Woodruff, Philadelphia; chairman of Executive Committee, M. N. Baker, Montclair, N. J.

The Baldwin Prize for the best essay on "Tendencies in Municipal Budget Making" was awarded to Albert Elmer Marks, of Harvard University, with honorable mention of the essays submitted by Joseph Low, A. T. Ginsburgh, Edmund Jolles of Harvard, and Miss Wilhelmina M. Josopait of Wellesley.

The Portland Prize for an essay on "The Public Defender" was awarded to Drott N. Larsen of Reed College.

The Morton D. Hull Prize was awarded to Robert D. Armstrong, graduate of the University of Wisconsin, for his essay on "Public Utility Regulation in Indiana, 1906-1917."

During the year the following volumes were published in the National Municipal League Series: *Municipal Functions*, by Herman G. James, and *Town Planning for Small Communities*, by Charles Sumner Bird, Jr.

The league's official publication, the *National Municipal Review*, was continued under the editorship of Clinton Rogers Woodruff and his associates, Prof. Howard L. McBain, Dr. C. C. Williamson, Prof. Herman G. James, and Miss

Alice M. Holden. It was converted into a bi-monthly.

MUNICIPAL OWNERSHIP. No marked changes occurred during the year 1917 as regards the ownership of franchise utilities, but war conditions stimulated agitation for the municipal supply of milk and coal. Towards the close of 1917 a number of cities, acting independently or in connection with Federal and State governments, took direct charge of some part of the coal supply within municipal limits. One of the features of the platform on which the Democratic party as represented by Tammany went back into power in New York City was a strong and sweeping demand for municipal ownership.

BIBLIOGRAPHY. Important books of the year were: Thompson, *Municipal Ownership* (New York), a readable brief on the negative side; and Bolton, *A Municipal Experiment* (New York), another brief against municipal ownership, which deals with power plants and is in the New York City Hall of Records.

MUNITION PLANTS. See MILITARY PROGRESS.

MUNITIONS. See MILITARY PROGRESS.

MUSEUMS. See PAINTING AND SCULPTURE.

MUSIC. GENERAL NEWS. The entrance of the United States into the war had no noticeable effect upon musical affairs until after the opening of the autumn season. All organizations concluded their spring season, carrying out their plans as originally announced. No discrimination was made against "enemy music," nor were the German musicians who happened to be in the country at the time molested in any way. During the summer months, however, opposition to German music made itself felt in certain quarters, so that those responsible for the management of the larger musical organizations became somewhat apprehensive. The managers of opera, excepting the Metropolitan Opera House, immediately eliminated German singers and German operas; whereas the managers of concert enterprises waited for the opening of the regular fall season to determine the feeling of their subscribers and patrons. Not all adopted such drastic measures as Walter Damrosch, who at the first concert before taking his baton, read a letter of protest from a subscriber against the productions of any works by a German composer, and practically put the question to a vote. As the season progressed it became evident that the serious music-lovers wished no discrimination made in matters of art, and of all the great symphony orchestras that of Philadelphia was the only one to place German music under the ban. This sudden awakening of the patriotic feeling has undoubtedly been of benefit to the American composer. Although for some years past his works have appeared in ever increasing numbers upon the programmes of the important orchestral and choral associations, an examination of the programmes performed since October shows that very few concerts have beeen given without some representative American composition. The regrettable Muck incident (see *Orchestras*) stirred up considerable ill feeling for a time, especially in non-musical circles, but swiftly moving events of greater moment caused this particular excitement to be forgotten almost as suddenly as it had sprung up. Special propaganda for French music was made by the "French-American Association for Musical Art," which brought over to this country the "Société des Instruments Anciens" (see *Chamber-Music*), Joseph Bonnet (see *Artists*, Instrumentalists), and Eugène d'Harcourt (see *Choral Societies*).—The "Union des Femmes Artistes Musiciennes," founded in Paris in 1910, established a branch in New York as the "Musical Union of Women Artists of America," under the direction of Mme. Christiane Eymael, who had been the director of the Paris organization for five years. —Several of the larger music-publishers, having considered the matter of reprinting German copyright music, decided to respect the copyright, as infringement might lead to complications after the reëstablishment of peace.

THE UNITED STATES

ARTISTS. *Instrumentalists.* Although an enormous number of piano-recitals were given during the year, there is only one important début to be recorded, that of the young Chilean pianist, Rosita Renard (New York, March 12). Her remarkably fine and reliable technic and highly developed sense of tonal color won for her more than ordinary success. After an absence of several years Arthur Friedheim, the unexcelled Liszt interpreter, was heard again with genuine pleasure. In a number of recitals devoted exclusively to the works of Liszt he also appeared in the novel rôle of lecturer, prefacing each number by a few words of explanation. Tina Lerner, who for the past few seasons had been playing in the West, revisited the Eastern States, and was warmly received. The Dutch pianist, Jean Sickez, found that his protracted absence had not dimmed the memory of his fine art. Dorothy Berliner, who hitherto had confined herself to programmes of a more intimate nature exhibiting her exquisite refinement and eminently poetic temperament, showed that she is also equal to the demands made by works cast in the heroic and passionate moods. Rudolf Ganz, whose admirers have complained of his comparatively infrequent appearances in public, has remedied that fault during the past year, with the result that his superb qualities have won for him many new admirers. Otherwise the list of pianists heard during the past year is almost a duplicate of that of the artists of the preceding year. The list includes the names of Ignace Paderewski, Leopold Godowsky, Harold Bauer, Josef Hofmann, Percy Grainger, Mischa Livitzki, John Powell, Carl Friedberg, Ossip Gabrilowitsch, Edwin Hughes, Richard Buhlig, Harold Henry, Leo Ornstein, Arthur Shattuck, Fanny Bloomfield Zeisler, Olga Samarov, Ethel Leginska, Guiomar Novaës, Margaret Volavy, Ethel Newcomb, Eleanor Spencer, Yolanda Merö, Marguerite Melville-Liszniewska. In the year's record Teresa Carreño should be mentioned separately, for on March 13 that great artist was heard for the last time in the United States (New York). Her very last public appearance took place in Havana on March 21. A stroke of apoplexy necessitated the cancelling of her Cuban tour (see CARREÑO). —The début of the young Russian violinist, Jascha Heifetz (New York, October 27), was one of the most emphatic successes on record. Without a dissenting voice the critics pronounced him the equal of the greatest living masters, both as regards technical equipment and maturity of conception. Just before the United States declared war upon Austria Fritz Kreisler cancelled his American tour, involving contracts to the amount of $85,000. Immediately Maud Powell offered to fill the dates at the original prices, and to turn the entire amount over to the Red Cross. On January 8 she gave a unique recital, playing a request-programme selected exclusively from the records she had made for the Victor Company. Marie Caslova, who some years ago had made a premature début, returned as a finished artist. Although her tone is not large, it is very sympathetic; she made an excellent impression through her faultless intonation, purity of style, and general grace and refinement. Other well-known violinists heard were Eugène Ysaye, Mischa Elman, Efrem Zimbalist, Theodore Spiering, Albert Spalding, Francis Macmillen, Maximilian Pilzer, Édouard Deru, Eddy Brown, Samuel Gardner, Isolde Menges, Marie Zentay, Vera Barstow.—More representatives of the violoncello were heard than usual. Among the newcomers there were no stars of the first magnitude, but all were masters of their instrument. Engelbert Roentgen, a Dutchman, who was engaged as solo-cellist of the New York Symphony Orchestra in the fall of 1916, made his début as soloist with that organization on January 21, playing his father's (Julius R.) concerto. Maurice Dambois, a Belgian, made the deepest impression with his unusually large and sympathetic tone (New York, April 21). Max Gegna, a Russian, also proved himself an artist of sterling merit (New York, March 23). Among the prominent masters heard were Pablo Casals, Boris Hambourg, Alwin Schröder, Leo Schulz, Willem Willeke, Herman Sandby, Paulo Gruppe, Bogumil Sykora, Vladimir Dubinsky, Gerald Maas.—An event of special interest was the début of the famous French organist, Joseph Bonnet, who was first heard on the fine organ at the College of the City of New York (January 30). In the fall he gave a series of five historical concerts, presenting the development of organ-music from the forerunners of Bach to the modern masters.

Vocalists. Great interest was aroused by the announcement of a series of four historical recitals by that past mistress of her art, Marcella Sembrich. Unfortunately she sang only the first recital (January 4), presenting folk-songs of various nations. Overwork in connection with her duties as president of the Polish Relief Commission caused a nervous breakdown, necessitating the cancellation of all engagements. Francis and Florence Maclennan, who before had proved their worth as operatic artists, appeared with equal success on the concert-stage, notably in their duet-recitals. Louis Graveure, the Belgian baritone, who had made such a deep impression the preceding year, appeared in numerous recitals and as soloist at most of the important festivals, winning universal recognition as one of the world's foremost concert-singers. Among the recognized favorites that were heard during the year were Ernestine Schumann-Heink, Elena Gerhardt, Julia Culp, Maria Barrientos, Tilly Koenen, Alma Gluck, Olive Fremstad, Frieda Hempel, Margarete Matzenauer, Marcella Craft, Marcia van Dresser, Ratan Devi, John McCormack, Emilio de Gogorza, Karl Jörn, Léon Rothier, Reinald Werrenrath.

ORCHESTRAS. The New York Philharmonic Society celebrated the seventy-fifth anniversary of its foundation by an extra series of four festival concerts (I, Beethoven-Wagner-Liszt. II, American and French composers. III, Bach-Beethoven. IV, American, French, and Slavonic composers) and a grand banquet, at which Arthur Curtiss James presented to the society the sum of $100,000 for the purpose of creating a building fund for the erection of their own concert-hall. At the same time George F. Baker contributed $10,000 to that fund. In the autumn the orchestra began its seventy-sixth season with a new concert-master, the Belgian violinist, Alfred Megerlin, and a new harpist, Alfred Kastner, formerly solo-harpist of the Queen's Hall Orchestra of London. Under its regular conductor, Josef Stransky, it also gave a number of concerts at various camps, performing lighter music that could be enjoyed by the average soldier. A notable concert of the New York Symphony Orchestra (Walter Damrosch) was that of March 11, when Beethoven's Triple Concerto was performed with Kreisler, Casals, and Bauer as soloists. To the orchestral forces of Chicago a new organization of fifty players, under the conductorship of Arthur Dunham, was added, beginning rehearsals in June, and opening their first season in the fall. In San Francisco a new municipal orchestra of sixty players, under Friedrich G. Schiller, was established for the purpose of giving high class symphony concerts for a nominal admission fee of ten cents. The first season opened on February 22, and was a great artistic and financial success. Having safely passed the crisis, which for a time seemed to threaten the very existence of the organization, the San Francisco Symphony Orchestra (Alfred Hertz) concluded a most successful season. During the months of June and July the New York Civic Orchestra gave a second season of summer concerts under a new conductor, Pierre Monteux. The largest attendance was on those nights on which the principal number was a Beethoven symphony. The series was severely criticized for the performance of much French music of inferior quality, while the works of American composers were entirely ignored. After several years of residence in Berlin Sam Franko returned to New York and resumed in January his former famous "Concerts of Ancient Music." The New York Society of Friends of Music, who in their first two seasons had limited themselves to the cultivation of chamber-music, enlarged the scope of their activities by including in their series some fine orchestral concerts. On one occasion they had engaged the Philadelphia Symphony Orchestra; on a second occasion they presented a number of new works by Ernest Bloch with the Metropolitan Opera House Orchestra under Bodanzky; and at a third concert Bloch himself conducted a programme of his own works and several by modern French composers. In three orchestral concerts which he gave in New York Ossip Gabrilowitsch, the famous pianist, revealed himself as a conductor of unusual ability. In Boston Emil Mollenhauer formed an orchestra of seventy performers, primarily for the purpose of educational concerts. A novel feature was the arrangement of private rehearsals to give an opportunity to composers of hearing their own works. The Boston Symphony Orchestra (Karl Muck) gave their entire New York Series without the assistance of a single

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AMELIA GALLI-CURCI
Grand Opera Soprano

© Mishkin. N. Y.

JASCHA HEIFITZ
Violinist

© Ira L. Hill

LOUIS GRAVEURE
Baritone

JOSEPH BONNET
Organist

FOUR MUSICAL ARTISTS PROMINENT IN 1917

outside soloist; in fact, the only work requiring the services of a soloist, Brahms's Double Concerto, was played by Anton Witek and Heinrich Warnke, the leaders of the violins and cellos, respectively. At the last concert of the spring season (both in Boston and New York) there was played for the first time in America a revised version of Liszt's *Faust Symphony*, made by the master in 1883, the MS. score of which was discovered in Bayreuth by Dr. Muck. The autumn season of the famous orchestra opened in storm and stress, owing to the conductor's rather tactless refusal to play the national anthem at the first concert in Providence. The incident aroused nation-wide comment, and in some localities bitter resentment, especially in Washington, Baltimore, and Pittsburgh, where the civil authorities forbade the concerts of the organization. For a time there were rumors that Col. Higginson would disband the orchestra, but gradually matters adjusted themselves, so that the concerts in Massachusetts and New York were given as scheduled. Dr. Muck receded from the position he had taken, and has since opened every concert with the national anthem, a practice adopted by all symphony orchestras. On December 16 the orchestra gave a concert for the benefit of the Halifax sufferers, which netted the sum of $10,000. As a result of the opposition aroused the Philadelphia Symphony Orchestra (Leopold Stokowski) was requested to eliminate from its concerts in Pittsburgh all works by German composers. The directors not only acceded to the request, but passed a resolution barring works by German and Austrian composers from all concerts of the orchestra. Before the opening of the season in the fall Dr. Ernst Kunwald, the conductor of the Cincinnati Symphony Orchestra, had tendered his resignation to the board of directors, who refused to consider it. After his sudden arrest by the Federal authorities on December 8, for reasons not made public (Dr. Kunwald is an Austrian subject), and his equally sudden release the next day he again presented his resignation, which the directors accepted with sincere regret. For the remainder of the season the system of engaging guest conductors was adopted, the first one being Walter Rothwell.—In the matter of novelties brought forward the year was a remarkably poor one, both for the quality and the number of the works produced. Worthy of mention are Edward Ballantine's symphonic poem, *The Eve of St. Agnes*, a work showing delicate imagination and refined taste, and Ernest Bloch's *Trois Poèmes juifs*, both given by the Boston Symphony Orchestra (January 19 and March 23, respectively). The Chicago Symphony Orchestra brought out Eugène d'Harcourt's *Symphonie Neo-classique* (March 3), an interesting and successful experiment showing that the classical form can be perfectly adapted to modern contents. A few days later (March 9) the same orchestra gave Felix Borowski's very beautiful *Élégie symphonique*. The Los Angeles Symphony Orchestra (Adolf Tandler) contributed C. W. Cadman's *Thunderbird Suite* (January 20), constructed entirely on original Indian themes. See also *Festivals*.

CHAMBER-MUSIC. The Cherniavsky Trio, formed by the three brothers, Jan (piano), Leo (violin), and Michael (cello), having begun its first American tour in the West in the fall of 1916, were heard for the first time in New York on January 16, and aroused great enthusiasm through their perfect ensemble. Another foreign organization that made a profound impression on the occasion of its American début (New York, January 14) was the "Société des Instruments Anciens," founded in 1900 in Paris, and brought here under the auspices of the French-American Association for Musical Art. The members are Henri Casadesus (viola d'amour), Maurice Hewitt (quinton), Eugène Dubruille (viola da gamba), Maurice Devilliers (bass viol), Regina Patorni (harpsichord), and Mme. Henri Casadesus (harp-lute). Their performances met with such favor that in the fall they began a second season, Louis Hasselmans taking the place of E. Dubruille, who had been called to the colors. For the first time in the history of the Flonzaley Quartet a new player took the place of one of the original members. Louis Bailly, formerly a member of the Capet, Marsick, and Geloso Quartets, replaced Ugo Ara, the viola, who had joined the Italian army. Like a shock came the news of the dissolution of the famous Kneisel Quartet, whose farewell appearances (Boston, March 13) and New York (April 3) became the occasions for tumultuous demonstrations. Founded in 1886 (with Franz Kneisel, Otto Roth, Louis Svečenski, and Fritz Giese as the original members), it had played thirty-two consecutive seasons in Boston and twenty-five in New York, besides having made numerous tours of the United States and two of Europe. Its influence in practically creating and cultivating a taste for chamber-music in America can scarcely be overestimated. For many years it had enjoyed an international reputation as one of the finest quartets in the world. After its dissolution Fritz Kreisler announced for the season of 1917-18 three special concerts by the ensemble (Hans Letz, Louis Svečenski, and Willem Willeke), himself taking the place of Kneisel. The first of these concerts took place on December 21 in New York. Hans Letz, for the last five seasons the second violin of the Kneisel Quartet, formed his own quartet with Sander Harmati, Edward Kreiner, and Gerald Maas, making a successful début in New York (October 30).

CHORAL SOCIETIES. On April 1, the Scranton Oratorio Society, with the assistance of an orchestra of 150 under the direction of Edgar Varese, gave at the Hippodrome in New York a performance of Berlioz's *Requiem*, in honor of the fallen of all nations. That the work made little impression was not altogether due to the execution, which was not above criticism; the chief fault lay with the composition itself, which, as time passes, seems to become more dull, hollow, and bombastic. The forced resignation of Louis Koemmenich as conductor of the New York Oratorio Society caused a violent dissension, which for a time threatened to disrupt the society (founded by Dr. Leopold Damrosch in 1873). In this crisis the directors turned to the founder's son, Walter Damrosch, who himself had been the conductor from 1885-90. While he accepted the post only for the season of 1917-18, in order to enable the directors to secure a permanent conductor, his popularity succeeded in uniting the warring factions. The famous Apollo Club of Chicago (H. M. Wild), which was about to be disbanded because of financial difficulties, was saved by the contributions of several music-lovers and the proceeds of a benefit concert arranged by the Piano and Organ Dealers' Association. The Philharmonic Society of Chicago (O. G. Erickson) gave the première of Clough-Leighter's *The Christ of the Andes* for eight-part chorus and orchestra, which made a very favorable impression. The New York Liederkranz celebrated the seventieth anniversary of its foundation with an elaborate festival concert (January 9) under its regular conductor, Otto Graff, assisted by Teresa Carreño as soloist. Mr. Graff died in May, and was succeeded by Eugen Klee. Under the direction of Eugène d'Harcourt a special performance of Gounod's *Mors et Vita* was given at the Metropolitan Opera House (April 8) by the Metropolitan chorus, orchestra, and soloists, the proceeds of which were turned over to the Franco-American Relief Committee of the Paris Conservatory. In connection with the Bach-Beethoven festival concert of the New York Philharmonic Society the famous Beethoven-Bach Choir (Frederick Wolle) was heard for the first time in New York, and fully justified its national reputation.

Festivals. The thirty-first annual Norfolk Festival (Litchfield County Choral Union) took place under the direction of Arthur Mees, Henry Schmitt, and Frederick Stock (June 5-7). The novelties produced were John A. Carpenter's *First Symphony*, of almost ultra-modern tendency, Percy Grainger's *The Warriors*, an imaginary ballet, N. Laucella's *Whitehouse*, a series of symphonic impressions, and C. V. Stanford's *Irish Rhapsody* No. 5. The sixtieth annual Worcester Festival was held on October 3-5, and conducted by Arthur Mees and Thaddeus Rich. The principal number was Saint-Saëns's *Samson and Delilah* (in concert form). The novelties were Horatio Parker's *Red Cross Hymn* (words by John Finley), Percy Grainger's *Marching Song of Democracy*, and Henry Hadley's *Ode to Music* (words by Dr. Henry van Dyke); the last two were written specially for this festival. Of the three, Hadley's *Ode* was the best, and was received with the greatest enthusiasm. The twelfth annual Norwegian Sängerfest at Seattle (August 31-September 3) was marked by the unveiling of a colossal statue of Grieg by the sculptor, F. H. Frolick, a former resident of Seattle. The concerts were under the direction of Rudolf Moller, whose comic opera, *Tjarlie Trallerud*, had its première on that occasion. From April 24-28 Frederick Stock conducted the first music festival on a grand scale which Chicago has had in thirty-three years. For the performance of the principal number, Mahler's *Eighth Symphony* in E flat (given on three successive days), the Chicago Symphony Orchestra had been increased to 150 players, and a chorus of 850 voices had been recruited from seven local choral societies. At the University of Pennsylvania De Koven's *Masque of the American Drama* (text by Albert E. Trombly) was produced in commemoration of the 150th anniversary of the production in Philadelphia of the first American drama, *The Prince of Parthia*. The fiftieth anniversary of the admission of Nebraska into the Union was celebrated by an elaborate pageant by Hartley B. Alexander, with music, partly original and partly based on themes of the Omaha Indians, by Howard I. Kirkpatrick, both of the University of Nebraska.

Opera. At the Metropolitan Opera House, of New York, 159 performances were given from a repertory of 40 works by 24 composers. According to nationality these were divided as follows: Italian, 17 works by 9 composers totalled 76 performances; German, 14 works by 6 composers totaled 38 performances; French, 6 works by 6 composers totaled 30 performances; Russian, 2 works by 2 composers totaled 9 performances; American, 1 work totaled 6 performances. Wagner, represented by 8 works, and Verdi, represented by 4, each had 23 performances; next came Puccini with 20 performances of 4 works. The works most frequently given were Bizet's *Carmen* (10 times), Verdi's *Aïda* (9) and Mussorgsky's *Boris Godunov* (7). Beethoven's *Fidelio* was given only once. The falling off in the number of representations of Wagner's works, which had always exceeded those of any other composer, was due to their elimination from the repertory with the opening of the fall season. In order to obtain a correct perspective, the 23 performances of Wagner (January 1-April 20) should be compared with the number of performances of Verdi and Puccini for the same period, which shows 16 for Verdi and 11 for Puccini. Thus it is seen that the same relative proportion has been maintained as in past years. Only two novelties were produced. De Koven's *The Canterbury Pilgrims* (March 8), with Ober and Sembach in the principal rôles, under the direction of Bodanzky, was received cordially. The libretto, by Percy MacKaye, offers too many complicated situations, and is not effective from an operatic standpoint. The music, while fresh and sparkling, is more adapted to operetta than to comic opera of the higher type; it also lacks originality, being frequently reminiscent of the composer's earlier operettas, especially *Robin Hood*. Rabaud's *Marouf* (December 19), with Alda, de Luca, and Rothier in the principal rôles, under the direction of Monteux, owed its favorable reception perhaps more to the superb stage-setting and splendid interpretation than to the power of its music, which lacks individuality. There is fine and very effective orchestration, which is the chief merit of the score; the musical invention is not striking, and the general style, a mixture of Wagnerism and impressionism, is wanting in homogeneity. More satisfactory were the revivals of Mozart's *Nozze di Figaro* (January 24), Gounod's *Faust* (November 17) and Donizetti's *Figlia del Reggimento* (December 17). The last named opera (not given since 1903, with Sembrich) was especially interesting as proving the vast superiority of Donizetti's comedies over his tragedies. Two new conductors made their first appearance. Roberto Moranzoni (début with *Aïda*, November 12) justified the verdict of Boston, where he had made an excellent reputation as one of the conductors of the Boston Opera Company. Pierre Monteux was not exactly unknown, having been heard in New York the year before as conductor of the Russian Ballet, and also during the past summer as conductor of the Civic Orchestra; he made his début with *Faust* (November 17), and has since proved himself a more efficient operatic than symphonic conductor. The new singers, Julia Claussen (début as Dalila, November 23), Morgan Kingston (as Manrico, December 1) and Florence Easton-Maclennan (as Santuzza, December 7) were artists of established reputation in the operatic world, and proved themselves valuable additions to the Metropolitan Company. May Peterson and Ruth Miller were excellent interpreters of secondary rôles. —The Chicago Opera Company brought out two novelties, Mascagni's *Isabeau* (November 16) with Raisa, Crimi, and Maguenat, and Campanini as conductor, was received with marked enthusiasm. The critics gave high praise to the text of *Illica*, and described the music as a faithful and effective portrayal of the dramatic situations. Henry Hadley's *Azora* (December 26), with Fitziu, Middleton, Lamont, and Goddard, under the direction of the composer, was cordially received. The work is frankly melodious; the orchestration was criticized as a trifle too heavy for the voices. Among the new singers Riccardo Stracciari (début as Rigoletto, November 25) created a sensation almost equaling that of Galli-Curci of the preceding season, while Geneviève Vix (début as Manon, December 1) also revealed a voice and talent of the highest order. Instead of the Sunday Wagner performances of former years, symphony concerts were given, at which many works by American composers were produced.—After the Boston National Grand Opera had gone into bankruptcy with liabilities amounting to over $123,000 (in the spring), its director, Max Rabinoff, organized the Boston Opera Company. A few performances were given in Canada and the United States, but early in December, owing to the reduction of passenger trains and consequent inability to maintain its schedule of performances, it was disbanded.—Under the management of Edoardo Petri, of the Metropolitan Opera House, a season of "educational opera" was given in connection with the summer courses at Columbia University (July 17-31). In spite of the excessively hot weather the attendance surpassed all expectations. The same was true of the regular summer season given at Ravinia Park (Chicago).—Under the modest name of "Society of American Singers" Albert Reiss gave a very successful season of "intimate opera" in English at the Lyceum Theatre, New York (May 7-19). In that short season occurred the American premières of Donizetti's *Campanello di Notte* and Pergolesi's *La Serva Padrona* (May 7) and Gounod's *Le Médecin malgré lui* (May 10). Besides unusually successful seasons in several of the larger cities, Fortune Gallo's San Carlo Opera Company gave special performances for the soldiers at Camp Funston, Kans. (December 12 and 13). Three days after the first production of his *Azora* at Chicago (December 26) Henry Hadley was notified that his *Bianca* had been awarded the $1000 prize offered by W. W. Hinshaw, with the guarantee of production during 1918.

EUROPEAN COUNTRIES. According to the meagre reports received from Germany, musical activity there did not decline, whereas in England, and especially in France and Russia, it increased remarkably. In Italy the operatic seasons in the principal cities were so disastrous that many of the foremost opera houses (among them La Scala in Milan) closed their doors. On the other hand, an experiment tried by the military authorities of furnishing operatic entertainment to the soldiers in the field met with unqualified success. The "Teatro del Soldado" during the months of August and September gave 149 performances, at which some of the stars of the first magnitude were heard. The attendance was estimated at 600,000. All expenses were met by the military authorities.

Bibliography. REFERENCE. *The Art of Music* (14 vols., New York), prepared under the supervision of D. G. Mason as editor-in-chief and César Saerchinger as managing editor by several of the foremost authorities on music, such as Richard Strauss, Sir C. H. H. Parry, C. M. Widor, Ernest Newman, Harold Bauer, Alfred Hertz, Leland Hall, Edward B. Hill, David Bispham, etc. Vols. 1-3 contain a full history of music from the earliest times to the present day; vol. 4, Music in America; vol. 5, The Voice; vol. 6, Choral and Church Music; vol. 7, Pianoforte and Chamber-Music; vol. 8, The Orchestra and Orchestral Music; vol. 9, The Opera; vol. 10, The Dance; vols. 11 and 12, Dictionary of Musicians; vols. 13 and 14, Musical Examples. The work is comprehensive in scope, including the very latest composers; the space allotted to the various topics is admirably proportioned to the relative importance of the subject matter; facts are stated concisely and accurately; the critical estimates have the weight of authority. In a work executed along the lines laid down occasional duplication is unavoidable, but divergent opinions of different writers on the same topic would seem to stimulate the critical faculty of the reader. A novel and very valuable feature is the plan on which the dictionary volumes have been prepared; they contain complete biographies, and ample references to the preceding volumes, where fuller treatment is found, give them the character of a very elaborate and complete index to the entire work, including the musical examples.—BIOGRAPHY. M. H. Flint, *Caruso and His Art* (New York), a biography and detailed analysis of his principal rôles, panegyric rather than critical; M. Montagu-Nathan, *Glinka* (London), the first biography in English; id., *Mussorgsky* (London), critically appreciative; A. E. Hull, *Skriabin* (London), full biography with detailed, critical analyses of principal works from the standpoint of the sympathetic admirer, with a tendency to overestimate the composer's importance; H. T. Finck, *Richard Strauss: The Man and His Music* (Boston), with the exception of Steinitzer's (the standard work, in German) by far the most comprehensive and important biography in any language, surpassing Steinitzer in impartiality and critical acumen.—HISTORY. W. Goodrich, *The Organ in France* (Boston), a concise and accurate account with full specifications of several representative instruments; M. Hargrave, *The Earlier French Musicians* (London), dealing with the period 1632-1834, a mere compilation from various sources, lacking in cohesion and orderly arrangement; W. W. Longford, *Music and Religion* (London), a brief survey of the art of music as the handmaid of religion; M. Montagu-Nathan, *An Introduction to Russian Music* (Boston), a clear and very concise exposition limited strictly to essentials; C. Macpherson, *Short History of Harmony* (London), rather superficial, much too condensed for so broad a subject; E. M. Skinner, *The Modern Organ* (New York), a brief, but authoritative, history of the evolution of modern organ-building.—CRITICISM, *etc.* J. G. Huneker, *Unicorns* (New York), a collection of essays dealing with art, literature, and music; A. H. Moncur-Sime, *Shakespeare: His Music and Song* (London), explains allusions to music and musical instruments in the dramas, with a special chapter on the songs of birds; M. Montagu-Nathan, *Contemporary Russian Composers* (New York), preceded by a survey of Russian music, treats critically and in detail the works of nine important composers; C. van Vechten, *Interpreters and Interpretations* (New York), contains, besides sketches of several contemporary singers, essays expressing strongly subjective judgments with a decided leaning toward futurism; C. Scott, *The Philosophy of Modernism* (London), a collection of very stimulating essays dealing with various aspects of modern music.—Singing. G. Heller, *The Voice in Song and Speech* (London), a lucid exposition of fundamental principles, with hints as to practical execution; F. E. Miller, *Vocal Art Science* (New York), a thoroughly scientific treatise built on the fundamental thesis, that all defects in voice-production are due to physical defects, and therefore can be cured by removing the physical cause.

MUSICAL UNION OF WOMEN ARTISTS OF AMERICA. See Music, *General News*.

MUSTARD GAS. See Chemistry, Industrial; Gas Poisoning; Military Progress.

MUTATION THEORY. See Zoölogy.

NATAL. An original province of the Union of South Africa. See South Africa, Union of.

NATIONAL ANILINE AND CHEMICAL CO. See Chemistry, Industrial.

NATIONAL ARMY. See Military Progress; United States and the War.

NATIONAL BANKS. Much of the matter contained in the article Banks and Banking relates to the national banks because they are the principal constituents of the Federal Reserve System. The growth of national banks in recent years has been truly remarkable. According to the report of the Comptroller of the Currency giving a summary of the combined business of all national banks on November 20, 1917, there were 7656 such banks with total resources of $18,553,000,000. This was an increase over November 17, 1916, of $3,033,000,000 and was more than 50 per cent greater than the aggregate resources at the end of 1912. Even more remarkable was the increase of $2,009,000,000 between September 11, 1917, and November 20. The total resources of national banks exceeded those of all State commercial banks, including trust companies and private banks, by $500,000,000.

The total deposits on November 20 were $14,798,000,000,000, an increase of $2,309,000,000 over November, 1916, and an increase of $1,564,000,000 over September 11, 1917. The increase between these two dates in 1917 was spread more or less uniformly throughout the country.

Total loans and discounts on November 20 were $9,535,000,000, an increase of $1,189,000,000 over the preceding year. Cash in vaults and due from Federal reserve banks amounted to $1,759,000,000 on November 20. United States bonds and certificates of indebtedness held by national banks aggregated $2,354,000,000 on November 20, an amount nearly three and one-half times as great as the amount held in November, 1916. Most of this increase in this latter item was due to short term certificates of indebtedness. Other bonds and securities held on November 20 amounted to $1,906,000,000. Total capital, surplus, and undivided profits on November 20 were $2,236,000,000, an increase of only $93,000,000 over November, 1916.

Trust Powers. The United States Supreme Court in the case of Bank *v.* Fellows, handed down on June 11 an important decision upholding the constitutionality of the provision of the Federal Reserve Act, authorizing member banks to exercise the powers of executors, trustees, administrators, and other fiduciary activities. The Federal District Court of Michigan had decided against the constitutionality of this section. The Supreme Court declared the section undoubtedly constitutional, thus granting the naional banks full authority to enter a field previously monopolized by the trust companies. For many years the national banks had felt the increasing competition of the trust companies who, in addition to their trust and administrative functions, had entered the field of commercial banking. The effect of the decision therefore was to equalize the competitive advantages of national banks and trust companies and to stimulate the latter to enter the reserve system. With these new powers, moreover, the small national banks can better serve their communities than was possible heretofore.

NATIONAL BOARD OF FIRE UNDERWRITERS. See Fire Protection.

NATIONAL CIVIC FEDERATION. This association held its seventeenth annual convention at the Hotel McAlpin, New York City, on January 23-24. About 600 men and women from all sections of the United States were present. Memorial services were held for the late Seth Low, formerly president of the association. Henry L. Stimson, former secretary of war, and Dr. John H. Finley, New York State commissioner of education, addressed the gathering and urged more extensive military training in the United States. A resolution was adopted seeking to obtain the establishment of a Federal commission to regulate immigration. In September it was announced that the federation was planning a big campaign of labor, capital, and politics to help win the war. The officers of the association are: V. Everitt Macy, president; Samuel Gompers, vice-president; and Ralph M. Easley, chairman of the executive council.

NATIONAL CONFERENCE OF CHARITIES AND CORRECTIONS. See Charities.

NATIONAL DEFENSE. See Military Progress; Naval Progress; United States and the War.

NATIONAL FORESTS. See Forestry.

NATIONAL GEOGRAPHIC SOCIETY. See Geographic Society, National.

NATIONAL GUARD. See Military Progress.

NATIONAL MUNICIPAL LEAGUE. See Municipal League, National.

NATIONAL PROBATION ASSOCIATION. See Penology.

NATIONAL RESEARCH COUNCIL. See Chemistry, Industrial.

NAVAL ACADEMY, United States. See United States Naval Academy.

NAVAL COMMISSION, Inter-Allied. See United States and the War.

NAVAL PRISONS. See Penology.

NAVAL PROGRESS. By far the most important naval event of the year was the entrance of the United States navy into the war and the addition of its forces to those of the

Entente powers. Under existing conditions its battleships were not needed, the British battlefleet alone being so vastly superior to the German that the latter did not dare to venture beyond the protection of its mine fields. But the American destroyers and patrol ships were of enormous value, particularly the destroyers, which were the most effective enemy of the submarine—actively, in chasing and destroying it, and passively, in protecting merchant ships against attack.

It is no longer possible to describe the developments of the various navies with accuracy. First, because of the secrecy enforced by the warring powers regarding their activities, but most of all because the United States itself is in the war and no information of value to the enemy should be published. With respect to the Entente Allies this confines us to a consideration of such information as has been made public by the various governments and published in the press at home and abroad. As the authorities had been very liberal in giving out information not considered detrimental to the Allied operations or undesirable for the enemy to learn, sufficient was known to give a general idea of the development of naval matters in friendly countries. As regards Germany and Austria a good deal of information was obtained from the press of neutral countries, captured vessels, prisoners, and other sources. Much of it was unconfirmed rumor but applying various tests, comparisons, and reasoning, some strongly probable conclusions might be derived even from rumors.

GREAT BRITAIN. At the end of 1917 the British navy still held its commanding position as the greatest of all navies. Its strength in ships of every class (except submarines), guns, and men was twice that of any other power. Since the war began not less than fourteen dreadnought battleships and six battle cruisers had been added to its fleet, besides many light cruisers, destroyers, and submarines. This addition alone exceeded the total strength of any other navy except that of the United States or Germany. According to German reports, four of the new British battle cruisers were of the *Tiger* type improved, and had a displacement of 30,000 tons, a speed of 32 knots, and 8 16-inch guns. Their names were the *Leopard*, *Glorious*, *Furious*, and *Courageous*. From the same German source we learned that six light cruisers of 3600 tons were building or completed. They were to have 40,000 I. H. P., a speed of 31 knots, an armor belt of 3-inch thickness, and carry 6 6-inch guns.

In 1915, 31 shallow-draft monitors were built and 3 purchased from Brazil. All were reported to carry two guns varying in calibre from 6 to 15 inches depending upon the size of the vessel; and nearly all were said to be fitted with caissons at the sides to reduce the danger of torpedo attack. They were found to be exceedingly useful in the Gallipoli operations, in the African rivers, and on the coast of Belgium.

The number of destroyers under construction at the outbreak of war was about 50. These were of course completed and it was estimated that at least 100 more had been built. The British reported 30 to 40 sunk, many of which were small and old boats. A large number of merchant vessels were taken into the naval service. Some were armed as auxiliary cruisers, others fitted as hospital ships, transports, supply ships, patrol vessels, etc. Hundred of trawlers were taken over and perhaps half as many more built. These were armed and used for patrol service and mine-sweeping. The work of these sturdy, seaworthy little vessels did much to neutralize the German mining operations on the British and Belgian coasts, and they destroyed many submarines. The cost of the British navy was about one billion a year. The estimates for 1917-18 provided for 450,000 men.

UNITED STATES. When the building programme of 1917 was completed the United States would be the second naval power by a safe margin over Germany of more than 35 per cent in displacement and gun power of the capital ships. On December 31, 1917, the war building programme actually in hand comprised a little more than 800 vessels. Including those commenced before the United States entered the war, it was, according to government reports, approximately as follows: 5 battleships of 32,000 tons, 12 14-inch guns, 21 knots speed; 4 battleships of 32,600 tons, 8 16-inch guns, 21 knots; 4 battleships of 42,600 tons, 12 16-inch guns, 23 knots; 5 battle cruisers of 34,800 tons, 10 14-inch guns, 35 knots; 6 scout cruisers of 7100 tons, 8 6-inch guns, 35 knots; more than 300 destroyers of 1100 tons, 4 4-inch guns, 35 knots; about 100 submarines (including those building before April 6, 1917, and not yet completed); 1 fuel ship of 14,500 tons, 1 hospital ship of 9800 tons, 1 ammunition ship; 345 submarine chasers; 20 to 50 mine-sweeping seagoing tugboats (this number likely to be increased to almost any figure).

To the foregoing list of vessels building must be added a vast number of merchant vessels, yachts, and pleasure craft which were taken over during 1917 to be employed as transports, fuel ships, hospital ships, patrol vessels, etc. The cost of the vessels building was estimated at $1,250,000,000. The normal rate of construction was greatly accelerated, particularly in the case of the destroyers, which were all to be completed by February 1, 1919. The submarine chasers were being delivered at the end of 1917; all of them and all the first batch of mine sweepers ordered were to be delivered by the spring of 1918.

To the floating navy must be added some hundreds of aircraft—kite-balloons, dirigibles, and airplanes (hydroplanes, torpedoplanes, flying boats, etc.). The personnel was increased between April 6 and November 15, 1917, approximately as follows: enlisted force of the navy, 64,680 to 149,169; naval reserve force (January 1, 1917, to November 15), 500 to 49,000; naval militia (National Naval Volunteers), 9500 to 16,000; hospital corps, 2000 to 7000; marine corps, enlisted force, 13,266 to 30,000; marine corps, officers, 426 to 1197. There were, on November 15, 1917, about 13,000 officers in the Navy, Naval Reserve Force, and National Naval Volunteers. The number of officers and men in the Marine Corps Reserves and National Naval (marine) Volunteers about 1800.

In addition to other developments, a great naval base had been established at Hampton Roads, the Jamestown Exposition Grounds and Pine Beach property constituting the land area. On this were being erected all the structures necessary for a fleet operating base, a naval training station, an aviation base, a submarine base, and other purposes. These included wharves, piers, offices, barracks, shops, and great storehouses of every kind. The enlargement of the Naval Academy provided for 2000 midshipmen. More than 1000 warrant officers were commissioned and over 1300 enlisted men were appointed to warrant rank. All navy yards were greatly expanded to take care of new construction, repairs, supplies, etc., and supply depots of large capacity were established at the principal naval ports. Also, new shipbuilding plants of unprecedented size were built to insure completion of the destroyer programme.

FRANCE. Of the French navy there is little to record. Three light cruisers of 4500 tons, laid down in 1914, were said to have been completed. Naval expenditure in 1917 was devoted chiefly to the repair and maintenance of the existing fleet and the construction of destroyers, patrol vessels, mine-layers, mine-sweepers, etc. The French army bore the brunt of the German onslaught and upon its continued efficiency depended the success of the Allied cause. Therefore, and because the British navy can safely be relied upon to hold the main German fleet in blockade, the French have turned all their energies into military channels. However, since the French navy at the outbreak of war was the fourth in the world, it was able without material accession of strength to be of enormous service in the Mediterranean and the British Channel as well as in defending its own coasts and commerce against submarine and destroyer operations.

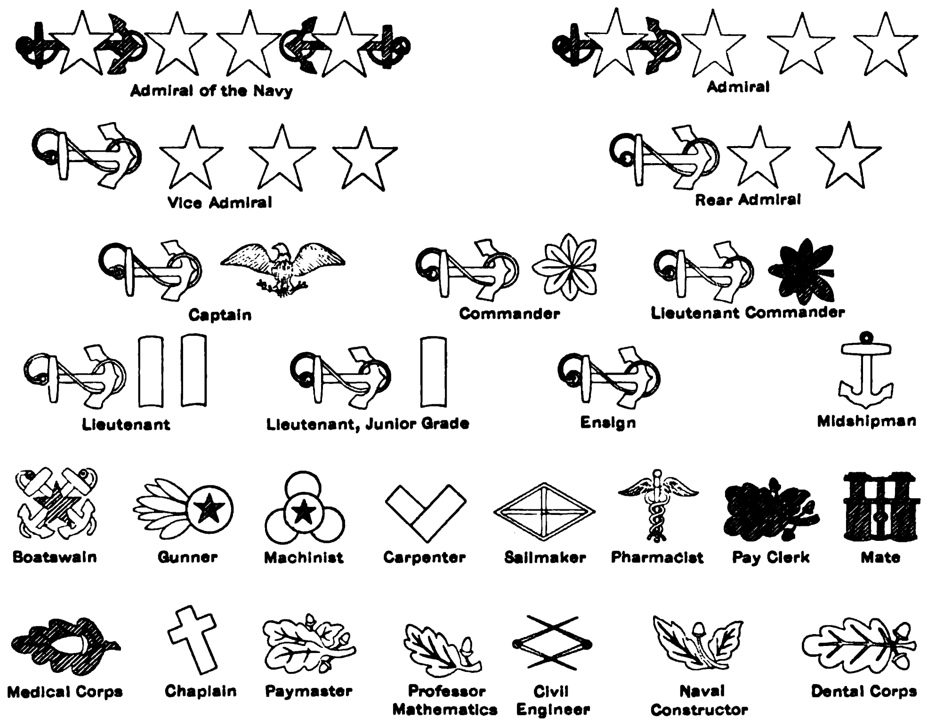
ITALY. Like France, Italy began no important vessels since her entry into the war—and for similar reasons. In the first ebullitions of war enthusiasm her navy conducted raiding operations in force along the Austrian coast, but the sinking of two armored cruisers by Austrian submarines showed the futility of such tactics and indicated the most dangerous enemy—a title it proceeded to further justify by the sinking of Italian merchantmen. In consequence of the "submarine menace," Italy pressed all suitable craft into her anti-submarine campaign and began building destroyers. She also carried the shallow-draft, torpedo-proof idea one step farther by the construction of gun-rafts. These were of sufficient size and buoyancy to carry heavy guns and a supply of ammunition; owing to their very light draft they were not likely to be struck by a torpedo, and if struck, they would not be put out of action.

JAPAN. Early in 1917 the Japanese government formulated a programme of construction which later was adopted by the parliament. The vessels proposed were as follows: 3 battleships, 2 battle cruisers, 6 light cruisers, 3 scouts, 2 large destroyers, 15 destroyers, 11 large submarines, 9 smaller submarines, 3 naval auxiliary ships. The sum of 260,641,700 yen ($130,000,000) was appropriated for their construction, the expenditure of which was to be spread over seven years. During 1917 the following ships were to be laid down: 1 battleship of 32,000 tons, 1 light cruiser of 7200 tons, 1 light cruiser or scout of 3600 tons, 1 destroyer of 1200 tons, 1 destroyer of 700 tons, 2 submarines of 700 tons, 1 naval auxiliary of 10,000 tons. In addition to the foregoing, at the request of the minister of marine, a supplementary sum of 12,000,000 yen was appropriated for the immediate construction of 6 destroyers. These were at once laid down and their completion in April, 1918, was expected. The other vessels under construction in 1917 were: 2 battleships of 30,600 tons, which were to be ready for service early in 1918; several destroyers, all of which were to be completed before the end of 1917; several submarines, one or two of which were completed during the year. The Japanese part in the war up to the end of 1917 was wholly naval. During 1917, cruisers were employed in policing the Pacific and Indian Oceans and a destroyer flotilla in the Mediterranean. In January, 1917, the battle cruiser *Tsukuba* (13,750 tons) was destroyed by an internal explosion and in June the destroyer *Sakaki* (665 tons) was sunk in the Mediterranean.

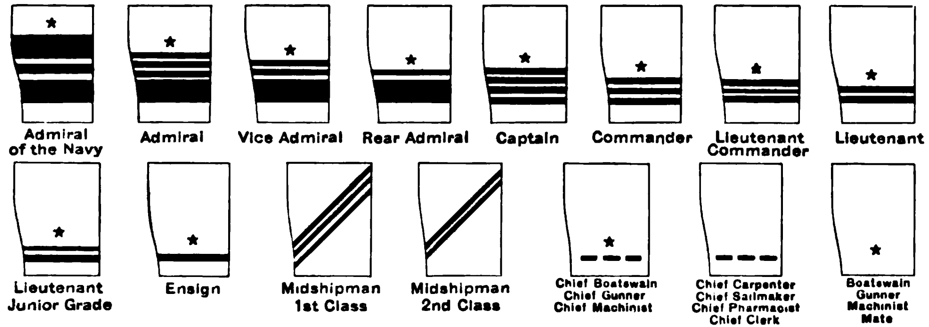
RUSSIA. The Russian navy at the end of 1917 was apparently in the same condition as the Russian army—disorganized as a mass, ineffective as a force, but with here and there a unit possessing some fighting qualities. There was no shipbuilding going on at the end of 1917 and the vessels of the fleet were said to be deteriorating from lack of intelligent care.

GREECE. The Greek fleet was dominated by the Allies while Constantine held the throne and many of the destroyers were seized and manned by the French, British, or Italians. It was reported in December that these had been returned and remanned by Greek officers and men. The Greek navy possessed about a dozen destroyers and about the same number of torpedo boats and they could be made of much use against German or Austrian submarines operating in the vicinity of her coasts. A 24-knot battleship of 19,200 tons, the *Salamis*, was building in Germany at the outbreak of war but was seized by the German naval authorities. A similar vessel was ordered in France in 1914; the degree of completion accomplished was unknown but it was doubtful if much work had been done on it.

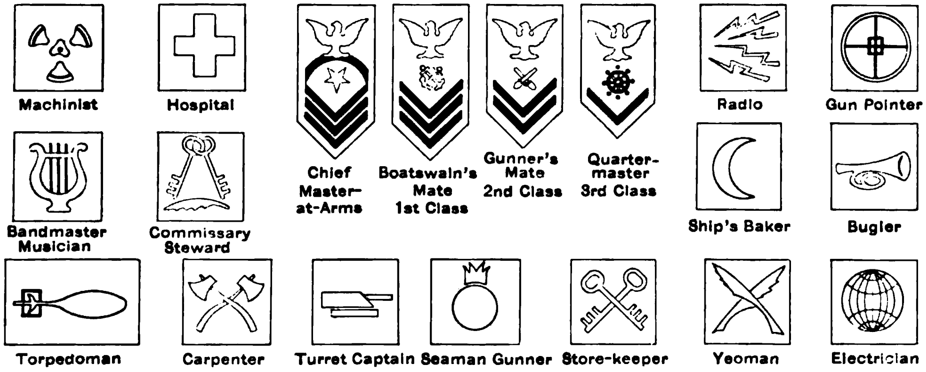
GERMANY. Such knowledge as we possessed at the end of 1917 concerning the building operations of the year in the German navy was fragmentary and inconclusive. At the outbreak of war the High Seas Fleet consisted of 17 dreadnought battleships and 20 pre-dreadnoughts. Since the war began 3 new dreadnoughts were completed and at least one pre-dreadnought lost. In 1914, 4 battle cruisers were in service and 4 building. Since that date, 4 battle cruisers were completed; 1 (the *Lutzow*) was lost, 1 (the *Goeben*) was in the Black Sea and nominally in the Turkish navy, and 1 (the *Von der Tann*) was thought to have been lost early in the war but the report was unconfirmed from any German source. Of 8 armored cruisers only 2 of the smaller and weaker ones remained. Of 23 light cruisers with a speed exceeding 22 knots that were in service in 1914, 13 had been sunk. At least 9 had been completed since the war began; and of these 2 were also sunk. The number of destroyers in service in 1914 was 149 and 17 were building. German destroyers, like German submarines, carry numbers instead of names and from several boats that were destroyed or captured it was deduced that not less than 90 boats have been laid down and completed since 1914 and there was no doubt that the new boats were much larger than the old ones, better armed, and probably equal in size, speed, and gun power to the American or British destroyers.



COLLAR INSIGNIA OF RANK AND CORPS DEVICES, UNITED STATES NAVY



SLEEVE MARKS OF RANK OF NAVAL OFFICERS
The same essential arrangement is worn on the shoulder, except in the case of flag officers



DISTINGUISHING DEVICES OF PETTY OFFICERS AND MEN

UNITED STATES NAVAL INSIGNIA

As to the number of German submarines in active service, building, lost, etc., there was a lack of sufficient information on which to base a close estimate. However, there was considerable reason to believe that at the beginning of the ruthless warfare against commerce on February 1, 1917, Germany had between 200 and 300 U-boats ready for use. Since that date she had probably built 125 to 175 (including small submarines and mine-laying boats) and had lost not less than 100. According to statements from British sources, 39 were sunk between November 1 and November 15, 1917. The report was probably an exaggeration, but many were certainly destroyed at that time. Most of the large boats of late type are of about 1200 tons and carry two 3.5-inch, two 4.1-inch, or two 5-inch guns. A larger type, possibly of more than 2000 tons, appeared in June, 1917, and were said to carry one or two 6-inch guns. Both the 1200 and 2000 ton types were rumored to have 2-inch armor over the top of the pressure hull and about the base of the conning tower. All U-boats were said to be built by classes, the parts standardized, and built in many steelworks in different parts of Germany. Not more than one-third of the completed boats were operating at one time as the duty was hard on the delicate machinery and fittings and there was constant need of repair.

One of the serious difficulties confronting the German navy was the personnel. During the early part of the war the submarine crews were made up of volunteers from the various ships of the fleet. But by September, 1915, the losses had become so great that volunteering practically ceased and men were detailed for the work. This, added to the shortage of food, was sufficient to cause discontent and unrest in the enlisted force. The terrible punishment received by many of the German vessels at the battle of Jutland and the realization by the men that the German fleet had no chance against the British greatly reduced the spirit and morale even of the better men and totally broke down that of others. Meanwhile the food situation grew worse and idleness in port, because the ships dare not go to sea (at least not far beyond the minefields), made conditions worse. During this period socialistic propaganda began to have considerable effect. Then came the Russian revolution, and its effect was instantly apparent in the fleet and among the workmen in shipbuilding and munition plants.

Early in the spring of 1917 a riot in which thousands took part broke out at Kiel, chiefly among the civil classes. Trouble of serious character occurred about this time on several ships. Of the *König Albert's* crew, 250 were sent to prison in Cologne. The next movement was a mutiny on the new cruiser *Nürnberg*. The men had overpowered the officers and were proceeding to Norway with the idea of being interned when the vessel was overhauled by destroyers, captured, and brought back. It became increasingly difficult to get submarine crews. A submarine school was established and 1000 men put under instruction. Many were sullen, disaffected, and made no attempt to learn except when forced to give attention and do their work. A few refused to go aboard submarines and these were summarily tried for mutiny and shot.

In August or September the crews of four vessels at Wilhelmshaven rose in revolt, hoisted the red flag, and took possession of the ships. Exactly what occurred in each case is not known. On the *Westfalen* the captain was locked in the cabin and the ship seized. On the *Prinz Regent Luitpold*, the captain and several officers were said to have been thrown overboard, the captain being drowned. On some ship or ships guns were disabled or dismounted and thrown over the side. The mutiny was finally quelled by calling in troops from the garrison. The reports refer only to the crews of the battleships *Kaiser*, *Westfalen*, and *Prinz Regent Luitpold* and of the light cruiser *Hamburg*, but doubtless other crews were similarly affected—perhaps to a very much less degree. Kaiser Wilhelm demanded that one in seven of the mutinous crews be shot, but the naval chief declared this impossible, though a number of men were executed and many others imprisoned. The basic facts of these serious mutinies was admitted by the German naval chief in the Reichstag and, whatever the details may have been, they indicate a condition of affairs in the German High Seas Fleet that is incompatible with efficiency.

AUSTRIA. Information concerning the Austrian navy was even more meagre than that concerning the German—possibly because there was not much to learn. Reports from fairly reliable sources stated that the four dreadnought battleships, proposed in 1914 but given up, were afterwards commenced. Two were completed in 1916. Little transpired as to the others but it was believed they were in service. Three fast light cruisers of about 4800 tons were about to be laid down when the war broke out. Reports indicated that two had been completed and that the third was destroyed at Monfalcone by Italian gunfire. One light cruiser, the *Zenta*, had been sunk and a second one reported destroyed, but the report lacked confirmation.

At the outbreak of war there were eighteen destroyers in the navy. Since that time the Austrian government had taken over one or more Chinese boats which were building at Trieste; and at least two destroyers had been sunk. Six destroyers of about 800 tons were proposed in 1914. Operations in 1917 seemed to show that many new ones of more than 800 tons had been built. In 1914, Austria had in service eight small submarines and there were at least three building. Soon after the war broke out she began the construction of others at Pola navy yard and at the Whitehead Works in Fiume. At least half of these are apparently of German design. Some German boats were sent into the Mediterranean via Gibraltar during 1915, and small mine-layers, like the one on exhibition in New York in the autumn of 1917, were sent from Germany in sections by rail. One French (the *Curie*) boat and one Italian (the *Giacinto Pullimo*) boat were repaired and added to the fleet; the former was sunk in Austrian waters and subsequently raised, while the latter was captured.

TURKEY. The Turkish navy was reorganized and to some extent revivified by the Germans, but the process did not appeal to the Turkish officers—it was possibly too strenuous or the German officers were too overbearing. At any rate, a strong sentiment against German control of the fleet was developed and the German admiral (Souchon) who was acting as commander-in-chief was recalled during 1917. It was presumed that most of the German officers returned to Germany with him. Whether the battle cruiser *Goeben* and the light cruiser *Breslau* had been turned over to the Turks was unknown but probably the Germans were keeping control of the ships for many reasons. First, they had no respect for the ability or the energy of the Turkish officers. Second, it would enable Germany to keep in touch with Turkish naval operations. Last and not least, it would enable Germany to control the Black Sea if Russia went out of the war or if her Black Sea fleet became moribund through mutiny or Bolsheviki propaganda. The navy yard at Constantinople, which had deteriorated until its machinery and equipment were practically useless, was undergoing mild regeneration when Turkey joined in the war. Since then, according to report, the Germans had put it in working order for repair of vessels and possibly for the building of small craft. In 1914, Turkey possessed ten new destroyers and ten torpedo boats a few years older. Since then she had lost two of each class. Due to German efforts, the remaining boats were probably in serviceable condition. There were a number of submarines flying the Turkish flag, but reports indicated they were all manned by Germans. One submarine was acquired in 1908; the others were supposed to be German boats sent via Gibraltar, English and French boats which had been raised and repaired, and small mine-layers sent from Germany by rail. At the end of 1917, aside from the *Goeben*, *Breslau*, and small craft, the Turkish navy possessed three ships—the old battleship *Torgut Reis* (1891), the old coast-defense ship *Muin-i-Zaffer* (1869—rebuilt, 1907), and the protected cruiser *Hamidieh* (3800 tons—built 1903).

Lesser Powers. Among the lesser powers, Spain was building one or more light cruisers (four in all were to be laid down) and several submarines (twenty-eight were projected and some were finished). Sweden was building two coast-defense armor-clads of 6800 tons and possibly some submarines and destroyers. Norway may have been building some destroyers or submarines, but this was improbable. Denmark completed a coast-defense armor-clad of 3900 tons in 1916 or 1917; no other work was known to be in hand. The Netherlands were building two light cruisers of 7100 tons, about eight submarines, and possibly some destroyers. Nothing was reported at the end of the year concerning their condition except that all construction had been greatly delayed. In the other navies there was no construction of importance because none of them had facilities for building large vessels and the great shipbuilding countries were fully occupied with work for themselves or for their allies.

Naval Operations of the Year. These were chiefly confined to the German war against commerce and the Allied war on the submarine. In addition to her U-boats, Germany was able to equip and send to sea several surface commerce raiders that had very successful careers and one returned in safety to a German port.

The principal naval events, operations, and incidents of the year were as follows:

On January 9, the old-type British battleship *Cornwallis* (14,000 tons) was sunk by an enemy submarine in the Mediterranean. On January 13, the Japanese battle cruiser *Tsukuba* (13,750 tons) was blown up by an internal explosion caused by a fire on board. About this time reports of German commerce raiders operating in the Atlantic became alarmingly frequent. On February 1, the German government announced unrestricted war against all vessels, enemy or neutral, which were found within specified areas surrounding the coasts of Great Britain, France, and Italy, the Mediterranean zone comprising nearly the whole sea (see Submarine Operations). All vessels would be sunk without warning and without regard to the safety of persons on board. The boundaries were carefully defined, but this was superfluous, as neutral and belligerent merchant and fishing vessels had not only been sunk when far beyond zone limits but also within neutral waters.

On March 1, Italy notified all powers of the laying of extensive mine fields about her coasts. On March 12-14, the revolution broke out in Russia which swept the czar off his throne. For a moment, enthusiasm and a hope for better things revivified the army. In the navy, revolution degenerated into bloodthirsty mutiny at once. The ships were seized, the officers murdered—400 being killed on the vessels at Kronstadt and Petrograd. Power and military control passed to the hands of the soldiers, sailors, and workmen; discipline, decision, order, and organization disappeared, and after a momentary flash in the pan in the army, the military and naval power of Russia melted away like snow under an April sun. On March 19, the French dreadnought battleship *Danton* (18,000 tons) was sunk by a submarine in the Mediterranean.

On March 22, the German sea-raider *Moewe* returned safely to a German port after a second cruise in which she sank twenty-two steamers and five sailing vessels of a total tonnage of 123,000. She was commanded by the same officer as on her first expedition, Count Schledien. Her success in passing through the British blockade was regarded as a most remarkable exploit. The sea-raider *Seeadler* was almost as successful in her destructive career as the *Moewe*. Formerly the captured American ship *Pass of Balama*, she was fitted with a powerful Diesel engine, wireless concealed in her rigging, and an armament of two 4.1-inch and sixteen machine guns stowed in her hold. Over these was piled a cargo of lumber and she slipped through the British blockade in the guise of a Norwegian sailing ship. After sinking thirteen vessels in the Atlantic she passed around Cape Horn, sank three American schooners, and then was wrecked on Mopeha I., Society Group. The captain (Lieut. Von Luckner), three officers, and two men put to sea in an armed motor boat and were soon captured. The remainder of the officers and men seized the small French schooner *Lutece* which had put in at Mopeha, armed her and proceeded to sea. Nothing further was heard from them.

On March 20, a German submarine sunk the British Red Cross hospital ship *Asturias*. She carried navigating and other lights, the Red Cross signals, and had the Red Cross flag brilliantly illuminated by a search-light. The sinking was therefore deliberate. The Germans alleged that they were sinking hospital ships because the British were using them to carry munitions and troops across the Channel. Possibly the Germans would commit such a faithless breach of law and humanity and they expect it in others. An arrangement was made subsequently by which a Spanish officer was to sail on each hospital ship and guarantee that it was used only for hospital purposes. Many other hospital ships were sunk during the year, some without Red Cross markings. On two of these German wounded were being carried and a number were drowned.

On April 6, the United States declared war against Germany. A destroyer and patrol fleet was rapidly prepared and, under the command of Vice-Admiral W. S. Sims, U. S. N., arrived in a British port on May 4 and joined the Allied anti-submarine forces. On April 20, occurred one of the most notable destroyer fights of the year. The large British destroyers or flotilla leaders *Swift* (2170 tons) and *Broke* (1850 tons) met a squadron of six German destroyers of the new large type (1200 tons—perhaps the flotilla leader was larger). Two German destroyers were sunk and the rest fled. During May, Italy reported that thirteen Austrian submarines had been sunk by Italian patrols in the four weeks preceding.

On May 1, the British ship *Gena* was sunk by an automobile torpedo dropped from a German seaplane. This was the first use of the airplane as a torpedo carrier in the war, though the idea was suggested by Rear Admiral Fiske, U. S. N., several years ago, and had been repeatedly urged by him since. Plans of the "torpedo-plane" for carrying, directing, and dropping automobile torpedoes had been furnished by him to the Navy Department and doubtless torpedo-planes were in the United States naval service. On April 19, a British and a German submarine collided while submerged. They both rose, sighted each other, and resubmerged. In manœuvring for position to use their torpedoes they lost sight of each other. A similar incident earlier in the spring took place in the same way, but when they resubmerged, the British boat went down slowly and landed on the German's conning tower, which was crushed in. In that position the Briton remained in order to insure putting the U-boat out of action. When it finally rose to the surface it dropped bombs on the German to make the latter's fate certain.

In June, the French armored cruiser *Kleber* (7600 tons) was sunk by a mine in the Atlantic. During the same month Vice-Admiral Sims temporarily succeeded to the command of British and United States naval forces in Irish waters. On June 12, King Constantine of Greece abdicated and on June 29, Venizelos, the new premier, proclaimed a state of war with Germany. Shortly after this, the Greek destroyers which had been seized and manned by the French, were returned to the Greek naval authorities.

Early in July the Brazilian navy joined the United States forces in the patrol of the South Atlantic. On July 9, the British dreadnought battleship *Vanguard* (19,250 tons) was destroyed by an internal explosion while at anchor. Of those on board at the time there were but two survivors. About this time the first large contingent of American troops arrived in France. The convoy was attacked by German submarines, but they were sunk or driven off. Not a man of the American army was lost during the year while on his way to France, though it was presumed that the German submarines were making extraordinary efforts to intercept the constantly arriving transports.

In the latter part of August or early in September a mutiny occurred on vessels of the German navy (see remarks on the German navy, *ante*) which indicated serious discontent in the fleet. In October, an American destroyer was torpedoed but was able to reach port. In the same month the old Russian battleship *Slava* (13,500 tons) was sunk by the Germans in their attack on Riga. On November 3, during a fight in the Kattegat between British destroyers and German light forces the German auxiliary cruiser *Marie* and ten German patrol boats were sunk. On November 20, the United States destroyer *Chauncey* was accidentally sunk by a merchant vessel she was convoying; three officers and eighteen men were drowned.

On December 6, the United States destroyer *Jacob Jones* was torpedoed and sunk by a German submarine; about sixty officers and men were lost. On December 14, the old French armored cruiser *Château Renault* was sunk by a submarine in the Ionian Sea. Nearly all on board were saved. The attacking submarine was sunk by Entente destroyers and her captain, two officers, and nineteen men made prisoners.

The table of warship losses has become so large that it was decided not to republish it in the YEAR BOOK for 1917. The following table gives a list of the important vessels lost during the year and forms a supplement to the table published in the YEAR BOOK for 1916, page 468 *et seq.* The meanings of the abbreviations used are given in the YEAR BOOK for 1916, page 470. Many more German and Austrian destroyers and submarines have been destroyed or captured that are not included in the table, but definite reports of them are wanting.

WARSHIP LOSSES

Supplement to table in 1916 Year Book

GREAT BRITAIN

Vessel	*Type*	*Tonnage*	*How Lost*	*Date*
Vanguard	B.D.	19,250	Ex.A.	9-7-17
Ariadne	A.C.	11,000	S.T.	7-17
Drake	A.C.	14,100	S.T.	2-10-17
Avenger	Aux. C.	......	S.T.	13-6-17
10 destroyers				

FRANCE

Vessel	*Type*	*Tonnage*	*How Lost*	*Date*
Danton	B.D.	18,028	S.T.	19-3-17
Suffren	B.	12,527	S.T.	26-11-16
Gaulois	B.O.	11,082	S.T.	27-12-16
Kleber	A.C.	7,578	M.	27-6-17
Château-Renault ..	F.C.	7,898	S.T.	14-12-17
Surprise	G.B.	636	S.T.	12-16
Cassini	G.B.	945	S.T.	28-2-17
Boutefeu	D.	703	G.	20-5-17
2 destroyers				

ITALY

Vessel	*Type*	*Tonnage*	*How Lost*	*Date*
Regina Margherita.	B.	13,214	M.	11-12-16
Umberto I.	Aux. C.	......	M.	9-17

RUSSIA

Vessel	*Type*	*Tonnage*	*How Lost*	*Date*
Slava	B.	13,500	(?)	10-17
3 destroyers ..				

JAPAN

Vessel	*Type*	*Tonnage*	*How Lost*	*Date*
Tsukuba	B.C.	13,750	Ex.A.	13-1-17
Sakaki	D.	665	S.T.	11-6-17

UNITED STATES

Vessel	Type	Tonnage	How Lost	Date
Chauncey	D.	420	Col.	20-11-17
Jacob Jones	D.	1,150	S.T.	6-12-17
(?)	Patr.	......	F.	4-10-17

GREECE

Vessel	Type	Tonnage	How Lost	Date
Doxa	D.	344	Ex.A.	28-6-17

GERMANY

Vessel	Type	Tonnage	How Lost	Date
U-20	S.	350	I.	4-11-16
U-30	S.	...	I.	17

33 other submarines (besides those not reported by British for military reasons)

11 destroyers

AUSTRIA

Vessel	Type	Tonnage	How Lost	Date
VC-12	S.	...	Cap.	1-17
VT-12	S.	...	Cap.	1-17

14 other submarines were reported by the Italians as sunk or destroyed in a few weeks.

For other naval information, see BATTLESHIPS, ETC.; SUBMARINE OPERATIONS.

NAVY. See BATTLESHIPS, ETC.; NAVAL PROGRESS; SUBMARINE OPERATIONS; SUBMARINES; UNITED STATES.

NEBRASKA. POPULATION. The population of the State in 1910 was 1,192,214, and on July 1, 1917, it was estimated to be 1,284,126.

AGRICULTURE. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture, in 1916-17, were as follows:

		Acreage	Prod. bu.	Value
Corn	1917	9,240,000	249,480,000	$299,376,000
	1916	7,400,000	192,400,000	150,072,000
Wheat ...	1917	997,000	13,764,000	26,840,000
	1916	3,540,000	68,550,000	109,680,000
Oats	1917	3,038,000	115,444,000	70,421,000
	1916	2,250,000	79,875,000	37,541,000
Potatoes .	1917	147,000	12,495,000	13,370,000
	1916	105,000	7,665,000	11,498,000
Hay	1917	1,590,000	*a* 2,544,000	38,669,000
	1916	1,850,000	3,885,000	27,584,000

a Tons.

TRANSPORTATION. The total railway mileage on December 31, 1916, was 8335. The railroads having the longest mileage were: Chicago, Burlington, and Quincy, 3609; Union Pacific, 2111; Chicago and Western, 1307.

The legislature of 1917 passed a law relating to car distribution and the loading of live stock ships. There was very little construction during the year.

FINANCE. According to the report of the State treasurer for the biennial period, December 1, 1914-November 30, 1916, the total receipts were $14,120,267 and the disbursements $13,577,702. At the beginning of the period there was a balance on hand of $746,188, and at the end a balance of $1,288,674.

EDUCATION. The total number of children of school age in 1916 were 385,508, of whom 228,680 were subject to compulsory education. The total enrollment in the public schools was 295,225. The number of female teachers was 11,100 and the number of male, 1506. The average monthly salary of male teachers was $73.21, and of females $50.94.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State are under the control of the board of commissioners of State institutions. They include the Nebraska Institute for Feeble-Minded Youth at Beatrice, the Girls' Industrial School at Geneva, the Nebraska Soldiers' and Sailors' Home at Burkett, the Asylum for the Insane of Nebraska at Engleside, the State Hospital for Tuberculosis at Kearney, State Industrial School at Kearney, the Hospital for the Insane at Lincoln, Orthopedic Hospital at Lincoln, The Nebraska Industrial Home at Milford, the Institute for the Blind at Nebraska City, Hospital for the Insane at Norfolk, School for the Deaf at Omaha, and the Home for Dependent Children at Lincoln.

POLITICS AND GOVERNMENT. On November 22, Governor Keith Neville resigned to become Colonel of the 7th Regiment of the Nebraska National Guard.

LEGISLATION. Among the more important legislative measures passed by the legislature of 1917 are those noted below.

Provision was made for the submission to the voters of the question whether a constitutional convention should be summoned to revise the State constitution. A modern and uniform accounting system was created. Provision was made for a State Publicity Bureau. The city manager plan for the government of cities was approved. The right of women to vote was extended to all offices not specified in the State constitution. Measures were enacted providing for the voting of citizens absent on military service. A novel method for eliminating presidential electors from the ballot was put into operation. The governor is required to appoint as the presidential electors of the State those electors nominated by the party whose candidate for president and vice-president receive the highest number of votes. Provision was made also for the election of the judiciary and certain school officers by non-partisan ballots. A State fund was created to meet the crop losses caused by hail. Pipe lines for conveying salt were declared common carriers.

STATE OFFICERS. Governor, Keith Neville,* Lieutenant-Governor, Edgar Howard; Secretary of State, C. W. Pool; Treasurer, G. E. Hall; Auditor, W. H. Smith; Attorney-General, W. E. Reed; Superintendent of Education, W. H. Clemmons—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, A. M. Morrissey; Justices, Chas. B. Letton, Francis G. Hamer, William B. Rose, Samuel H. Sedgwick, James R. Dean, Albert J. Cornish; Clerk, H. C. Lindsay.

NEBRASKA, UNIVERSITY OF. A co-educational State institution of learning at Lincoln, Neb. In the fall of 1917 there were 2763 students and 325 members of the faculty; under normal conditions it is estimated that the enrollment in 1917 would have been at least 3500. Volumes in the library numbered 137,050. Productive funds in 1917 amounted to $840,127 and the income to $51,100. The university was founded in 1869. President, Samuel Avery, Ph.D.

NECROLOGY. The following list contains the names of notable persons who died in 1917. An asterisk before a name indicates that it will be found in its proper alphabetical place in the YEAR BOOK as the title of a separate article.

* Abramovitz, Jacob.

Achelis, Frederick. Formerly president of the North German Lloyd Steamship Company and a director of the National Bank of Bremen, Germany. Seventy-seven years old. Died, May 20.

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* See above.

Allen, John. Lord Allerton. A Member of the House of Commons for more than twenty years, up to the time he was made First Baron of Chapel Allerton, in 1902. He was Financial Secretary of the Treasury from 1885 to 1891 and was Chief Secretary for Ireland in 1891 and 1892. Born 1840. Died, April 4.

Ambruster, Karl. German pianist conductor and lecturer. Apostle of Wagner. Born 1846. Died in London, June 10.

Anderson, Elizabeth Garrett. English woman physician and first woman Mayor in England; for some years a militant suffragist; at first was refused a medical degree by College of Physicians and Surgeons in England, but received a degree later from the University of Paris; elected Mayor of Aldeburgh in 1908. Born 1836. Died December 17.

Anderson, Thomas McArthur. Retired Major General of Volunteers, U. S. A. Was studying law in Cincinnati when the Civil War broke out. Rose to the rank of major at the battle of the Wilderness and was breveted lieutenant colonel for his services at the battle of Spottsylvania. Born January 21, 1836. Died, May 8.

• Anderson, Winslow.

• Andrews, Elisha B.

Aoyama, Tanemichi. Dean and professor of the Medical College of the Tokio Imperial University, having held these positions since 1888. One of the Imperial Court Physicians. Born 1859. Died, December 23.

Argents, G. Professor of surgery, University of Palermo. Seventy years old. Died, c. April.

• Arnold, Conway Hillyer.

• Arriaga, M. José de.

Arthur, Lee. American playwright. In 1898 his first play "Private John Allen" was produced in Washington. Forty years old. Died, December 9.

Ashe, Thomas. A Sinn Fein leader who died in prison while on a hunger strike. Died, September 26.

• Atwood, Isaac Morgan.

• Austin, David Elwell.

Ayres, Samuel Loring Percival. A retired rear admiral, U. S. N. Entered the navy in 1858 and served under Admiral Farragut in the Civil War; was retired in 1897 after thirty-eight years' service, and in 1906 was made rear admiral "For services during the Civil War." Born 1835. Died April 29.

Azcarate, Gumersindo de. Leader of the Republican party in Spain. He was regarded as a man of extraordinary political talent, and was often consulted by King Alfonso in difficult circumstances. Seventy-eight years old. Died, December 14.

• Baeyer, Adolf von.

Baird, William Raimond. Lawyer, lecturer, and author of college fraternity books. Graduate of Stevens Institute of Technology. Attended Columbia Law School and School of Political Science. Began the practice of law in 1882. Was president of the College Fraternity Publishing Company. Contributed to *Johnson's Encyclopedia* and *Encyclopædia Britannica*. Born, 1854. Died, March 15.

Baker, William Wilson. Professor of Greek at Haverford College since 1904. Was graduated from Harvard in 1898 where he remained as an instructor in Latin until 1901. Forty-one years old. Died, October 11.

Bancroft, George. Head of the banking firm of George Bancroft and Co., New York City. Member of New York Consolidated Exchange. Fifty-eight years old. Died, December 17.

Barbour, William H. Capitalist, manufacturer, and leader in the American Protective Tariff League, of which he was elected president in 1910. Treasurer of the Republican National Committee in 1911. Director in numerous manufacturing concerns, mostly thread and flax spinning. Fifty-nine years old. Died, March 1.

• Barlow, Jane.

Barnabee, Henry Clay. Familiar as the sheriff of Nottingham in De Koven's comic opera *Robin Hood*. Was mostly noted for his comic rôles but also appeared in many serious ones. Seventy years old. Died, December 16.

• Basserman, Ernst.

Bassot, General J. A. L. An American astronomer. Seventy-five years old. Died, January 17.

• Bateman, K. J.

Bates, Alexander B. Rear admiral U. S. N., retired. Entered the navy in 1863. Served with the James River squadron. Chief engineer of the battleship *Texas* during the Spanish-American War. For service on this vessel he was advanced ten numbers for "eminent and conspicuous conduct in battle." Seventy-five years old. Died, February 19.

Bathrick, E. R. Representative in Congress of the 14th Ohio District. Served in three Congresses. Lived in New York for a while where he bitterly attacked Tammany Hall. Born January 6, 1863. Died, December 28.

Battelli, A. Professor of experimental physics at the University of Pisa, Italy. Wrote works on electricity from the medical standpoint, experimental physics, etc. Won several prizes. For some years was a member of the Legislature. Fifty-five years old. Died, c. March.

Baudouin, Manuel. President of the Court of Cassation, France, and attorney-general of the court at the time of the famous Dreyfus trial. His argument, which covered a period of ten days, was followed by the vindication of Dreyfus. Seventy years old. Died, January 23.

Beach, Austin. Managing editor of the Pittsburgh *Dispatch*, and for many years one of the best known newspaper men in Pennsylvania. Accompanied "General" Coxey on his march to Washington. Sixty-two years old. Died, October 16.

Beadleston, Alfred N. Head of the brewing firm of Beadleston and Woerz. A pioneer brewer of New York. Member of a number of social clubs. Sixty-nine years old. Died, August 9.

Beaman, George William. Rear admiral U. S. N., retired. Was a newspaper correspondent with Grant in the early part of the Civil War. Entered the navy as acting paymaster in 1862 and was pay director when he retired in 1889. Seventy-nine years old. Died, May 3.

Beardsley, Charles Shepard. Lawyer, banker, and journalist. Was one of the organizers and was vice-president and director of the Gotham National Bank, New York City, but retired from active business in 1911, since which time he had been engaged in literary work. Seventy-two years old. Died, July 9.

Beckett, Ernest William. See Grimthorpe, Baron.

• Beckwith, James Carroll.

• Behring, Emil Adolph von.

Bel, Ferreol François Colonel Bel was the first high French officer to fall in Italy after the French sent their expeditionary force there to stem the German invasion. Died, c. December 12.

Belin, Henry, Jr. President of the E. I. du Pont de Nemours Powder Company of Pennsylvania. Seventy-four years old. Died, December 25.

Bell, Digby. An American comedian. Went to Italy in 1872 to study music. Made début in Malta. Concert work, New York, 1876; grand opera, Montreal, 1877, in *Fra Diabolo;* Gilbert and Sullivan rôles; revived Dr. Daly in *The Sorcerer;* Sam Weller in *Mr. Pickwick* with DeWolf Hopper in 1903. Born, 1851. Died, June 20.

• Benckendorff, Alexandre Constantinovitch.

Bergen, Joseph Young. An American scientist, graduated from Antioch College, Ohio. Author of *Elements of Botany; Principles of Botany* (with B. M. Davis); *Introduction to Botany*. Born, 1851. Died, 1917.

Berrer, General von. Commander of the Württemberg armies on the Northeast Front. Played a prominent part in the capture of Russian positions in this region. Died, c. November 2.

Bickel, Luke. One of the most successful American missionaries in Japan. Forty-eight years old. Died in June.

Birdwood, Sir George. Scientist and author. Officer of the Legion of Honor, laureate of the French Academy and formerly a professor of physiology in the Grant Medical College at Bombay. Prolific author on the industrial arts of India. K.C.I.E.; C.S.I.; K.G.J.J. Born in 1832. Died, June 27.

Birkeland, Kristian. Professor. A meteorologist. Fifty years old. Died, June 18.

Bissing, Moritz Ferdinand, General Baron von. Governor-general of Belgium from November, 1914. Came into prominence in connection with the execution of Miss Edith Cavell, the English nurse, frequent clashes with Cardinal Mercier, Primate of Belgium, and the deportation of Belgians. Born, 1844. Died, April 18.

Blackwell, W. W. Supreme chancellor of the Knights of Pythias a decade ago, and since recognized as an authority on the affairs of the order. Sixty-five years old. Died, December 26.

Blennerhassett, Lady. See GERMAN LITERATURE, necrology list.

• Blenk, James Hubert.

Blickensderfer, George. Inventor of typewriter bearing his name and of other mechanical devices. Since war began has been working on munitions inventions. Age 67 years. Died, August 15.

Bloundelle-Burton, John Edward. English novelist. Some of his works: *The Silent Shore; His Own Enemy; A Gentleman Adventurer; The Fate of Henry of Navarre*. Died, December 11.

Boardman, Samuel W. Professor Emeritus of

Maryville College, Tenn. Graduated in 1855 from Andover Theological Seminary and ordained to the Congregational ministry. After a pastorate at Norwich, Vt., he was appointed professor of rhetoric, English literature, and psychology in Middlebury College, of which he was later president. Born, 1830. Died, August 30.

Boelime, Erwin. One of the most successful German aviators, and successor to Captain Boelke, in command of the latter's squadron. His death occurred the day before the German emperor awarded him the Order of Pour la Mérite. Died, c. December 10.

Boileau, Philip. An artist whose heads of American girls have been widely known for years. Fifty-three years old. Died, January 18.

Bonner, David. A prominent man in the race horse world, as a road rider, breeder, and official in harness racing and horse shows. Did much to develop the trotting horse. Eighty years old. Died, December 30.

Borden, Frederick W., Sir. Minister of Militia and Defense in the Laurier administration in Canada, from its formation in 1896 until its defeat in 1911. Was a surgeon in the army and efficiently organized the Canadian troops which fought in the South African War. Born, 1847. Died, January 5.

Borochow, David B. One of the leaders of the International Zionist movement. Was recognized by the Jews as the leading theorist of the Jewish International Labor movement. Was exiled from Russia in 1907. Returned after the revolution to lead the Zionist party. Thirty-six years old. Died, c. December 18.

Botsford, George Willis. Professor of ancient history at Columbia University. Fifty-five years old. Died in December.

Botta, Luca. One of the leading tenors at the Metropolitan Opera Company, New York City. Born in Italy; studied at the Naples Conservatory. Thirty-five years old. Died, September 29.

* Bowell, Sir Mackenzie.

Boyle, John J. Sculptor. Began as a stone carver. Studied drawing at the Franklin Institute, Philadelphia, and the Beaux-Arts, Paris. In 1886 received honorable mention at Paris Salon for "Stone Age," now in Fairmount Park, Philadelphia. Statue of Benjamin Franklin in front of Philadelphia post office. For some years member of the New York Municipal Art Commission. Born in 1851. Died, February 10.

* Brady, James Buchanan.

Brault, J. Professor of diseases of tropical countries, and skin diseases, University of Algiers, Africa. Author on these subjects. Fifty-five years old. Died, c. April.

Brock, William Rees. Well-known pioneer in the Canadian dry goods, electrical development, and banking concerns. He was officer and director of many corporations, one of the founders of the Toronto *Empire*, which was amalgamated as the *Mail and Empire* in 1895. Born, 1836. Died, November 1.

* Brooke, Sir Charles J.

Brown, John Howard. Author and editor. Graduated from Eastern College in 1859. Originated and edited *The National Cyclopedia of American Biographies*, the name of which was later changed to *Lamb's Biographical Dictionary of the United States*. He wrote: *American Naval Heroes; All Around the World; Our First One Hundred Years.* Seventy-five years old. Died, April 22.

Bruce, George. A widely known Presbyterian clergyman in Canada. Organized St. Andrew's College, Toronto. Was ordained in 1875, and in 1894 became a D.D. Eighty years old. Died, November 17.

Bruce, Victor Alexander. See Elgin, Victor Alexander.

Brunnow, Rudolph E. An American educator and Semitic scholar. Fifty-nine years old. Died, April 14.

Bryan, Francis T. Captain, U. S. A., retired. Oldest alumnus of West Point and the University of North Carolina. Served in Mexican, Indian, and Civil Wars. Ninety-four years old. Died, October 25.

* Bryce, Lloyd S.

* Buchner, Edward.

Bulbring, K. See *Necrology* list under LITERATURE, ENGLISH and AMERICAN.

* Burnand, Sir Francis C.

* Burnham, Henry E.

Burton, George Hall. Brigadier-general, U. S. A., retired. Veteran of the Indian Wars. Retired in 1906 at his own request after forty years of service. Seventy-five years old. Died, October 20.

Byles, William Pollard, Sir. Liberal member of the British Parliament for the north division of Salford since 1906. Was formerly chief proprietor of the Bradford *Observer*. Member of the Inter-parliamentary Union for Peace and Arbitration. Seventy-eight years old. Died, October 18.

Cady, Philander Kinney. Professor Emeritus of the General Theological Seminary. Ordained in 1851. In 1889 he was appointed professor of evidences of natural and revealed religion in the General Theological Seminary. Born, 1826. Died, August 2.

* Caetini, Onorato.

Caldwell, Alexander. Former U. S. Senator from Kansas, and formerly president of the First National Bank at Leavenworth, Kan. Eighty-seven years old. Died, May 20.

Call, William Timothy. Secretary and treasurer of the Gage Publishing Co., Inc., New York City, publishers of the *Electrical Record*. Graduated from Bowdoin College; entered the newspaper field and became editor of *Boots and Shoes*. He was an authority on checker playing, having written many books on that subject. Born, 1856. Died, November 13.

* Carlstrom, Victor.

* Carman, Albert.

* Carolus-Duran, Emile Auguste.

Caron, Paul. Well-known French-Canadian journalist on the staff of *Le Devoir*. Died in action on the West Front with the French army, on April 16.

Carr, William J. Supreme Court Justice of the Appellate Division of New York State. Educated at St. Francis Xavier's College and Villanova College, where he studied law. In 1894 became United States Commissioner of Brooklyn. Elected Justice of the Supreme Court in Kings County in 1907 and was appointed to the Appellate Bench by Governor Dix in 1911. Born, 1862. Died, August 5.

* Carreno, Teresa.

* Carse, Matilda Bradley.

Carter, Jesse Benedict. Director of the American Academy in Rome. Formerly Professor of Latin at Princeton University. Delivered a series of lectures at French universities in the winter of 1916. Decorated by King Victor Emmanuel with the insignia of Commander of the Crown of Italy. Educated at New York University, Princeton, Leipsic, Berlin, and Göttingen. Ph.D. at University of Halle in 1913. From 1907 to 1912 director of the American School of Classical Studies in Rome. Born in 1872. Died, July 20.

* Cary, Edward.

* Caspari, Charles, Jr.

Cervera, E. One of the leading surgeons of Spain. Director of Instituto Rubrio since the death of Rubrio. Founded department at institute for research on cancer and published works on abdominal surgery, etc. Age, 61 years. Died, February.

* Chaillé-Long, Charles.

* Chamberlain, Robert N.

* Chandler, William Eaton.

* Chauveau, Jean Baptiste Auguste.

* Ching, Prince.

* Chittenden, Hiram M.

Choate, Isaac Bassett. Writer of several books of verse. Widely known as a language student and was the author of a Greek text-book. Eighty-four years old. Died, October 7.

* Choate, Joseph H.

* Christian, Prince.

* Church, John Adams.

* Church, William C.

Clark, Mortimer. Lieutenant-governor of Ontario from 1893 to 1898. Interested in various philanthropic organizations and long connected with Knox College. Eighty-one years old. Died, August 11.

Clark, Walter. American landscape painter and member of the National Academy of Design. Educated in the Massachusetts Institute of Technology. First devoted his efforts to sculpture and began landscape work in 1881 under the tutorage of Innes. Born, 1848. Died, March 12.

* Clark, William Bullock.

* Clements, Judson C.

Clifton, Marion P. A well-known actress in the latter part of the last century. Came to America from England and began her career in *Uncle Tom's Cabin*. Later she appeared in Cincinnati, Denver, Buffalo, and Rochester. Born, 1833. Died, November 8.

* Closson, Henry Whitney.

* Cody, William F.

* Cohan, Jeremiah John.

* Colt, Henry Leber.

* Colby, Gardner.

* Conn, Herbert William.

Connaught, Duchess of. Wife of Duke of Connaught, uncle of King George, and former governor-general of Canada. Third daughter of Prince Frederick Charles of Prussia, the "Red Prince." Ashes buried in St. George's Chapel, Windsor. Born, 1860. Died, March 14.

* Connor, Selden.

Conry, Michael F. Representative in the House of Representatives of the 15th district of New York. Forty-seven years old. Died, March 2.

Cooper, William A. A well-known art photographer who made a specialty of reproductions in the galleries of American millionaires. Born in Canada and spent several years abroad, studying his profession at London, Paris, and Munich. Seventy-four years old. Died, November 9.

Cornwallis-West, William. Was lord lieutenant of Denbighshire since 1872 and honorary colonel of the Fourth Battalion of Royal Welsh Fusiliers. One of the biggest land owners in England. Retired in January, 1917, because his wife became involved in an army scandal with a young Irish lieutenant. He served for a time in Parliament as a member of the Labor-Unionist Party. Was prominent in society. Eighty-two years old. Died, July 4.

* Cottman, Vincedon L.

Courmont, Jules. Professor of hygiene at the University of Lyons, and author of textbooks on micro-biology and general pathology. Since the beginning of the war had charge of hygiene in the whole Lyons district and was organizer and consulting hygienist for the entire front. Since 1909 corresponding member of French Academy of Medicine. Fifty-two years old. Died in March.

* Courthope, William J.

Coverly, William. For fifty years in the employ of the Anchor Steamship Company. Was resident manager of the concern for twenty-five years, before his retirement three years ago. Was a member of the New York Produce Exchange, and interested in several other business concerns.

Cowles, W. An expert in antique English furniture. He left New York in June, 1916, to join the British army. He was killed by a German shell on the Ypres battlefront in October.

* Crafts, James Mason.

* Crane, Frank.

Crane, Zenas. Manufacturer of paper in Massachusetts. One of the chief contributors to the last polar expedition of Admiral Peary. He gave the Berkshire Museum of Natural History, worth more than a million dollars, to Berkshire County, Mass., and with his brother established the Berkshire Home for Aged Women in Pittsfield. Born, 1840. Died, December 17.

* Crawford, John W.

* Crimmins, John D.

* Cromer, E. B.

Cruz, Oswaldo. Brazilian physician. In less than three years he stamped out yellow fever in Rio de Janeiro and did the same at Para in 1911. For some years was the head of the Institute of Pathology and Bacteriology named for him. Was formerly the Director of the Brazilian Sanitary Service. He received many honors at home and abroad. Died, February 12.

* Currier, Enoch Henry.

Cust, Harry. Former member of the British Parliament and editor of the famous *Pall Mall Gazette*. Chairman of the Central Committee for National Patriotic Organization. Famous as a wit and very prominent in society. Attended Eton. Writer of distinguished lyrics. Fifty-five years old. Died, March 2.

* Cutter, Ephraim.

Daly, Peter S. Veteran of the Mexican War. Santa Anna, the Mexican leader, surrendered to him. Ninety-four years old. Died, August 16.

Dantec, Félix le. An associate of Théodule Ribot, the French psychologist. Chargé du cours de biologie générale à la Sorbonne. Died, June 6.

* Darboux, Jean Gaston.

Darrach, May. Founder of the Darrach Home for Crippled Children, New York City. A cripple herself, she taught for many years in schools for crippled children and later studied medicine at the Woman's College. She was also interested in other charitable work. Died, October 18.

Dascomb, Mary P. A prominent Presbyterian missionary and teacher in Brazil for fifty years. Was a graduate of Oberlin in 1860. Born, c. 1841. Died in November.

Davies, Harry Rees. An actor who played many famous character rôles and was last seen in New York City as the judge in the *Lion and the Mouse*. He was born in Wales and came to America in 1859. He played in support of Otis Skinner and other stars under the management of David Belasco and Henry B. Harris. Eighty-seven years old. Died, September 20.

Davis, Nathaniel Newham. British author and playwright. He was also a lieutenant colonel in the British army, serving in the Straits Settlements, China, India, and Zululand. After he retired from the army he devoted his time to literary pursuits. He wrote *Lady Madcap* and *A Day in Paris*, which were produced in London and New York. In 1914 he was editor of *Town Topics*, when he was recalled into active service as a military guard over prisoners of war. Died, May 28.

* Degas, Edgar Hilaire G.

* Dejerine, Jules.

Delafield, Maturin Livingston. A retired New York merchant. Graduated from Columbia, 1856. M.A., 1859. Formerly treasurer of the International Telegraph Company. Born, 1836. Died, March 5.

* DeMorgan, William.

* Denney, James.

Dennison, Walter. Graduated from the University of Michigan, 1893. Ph.D., 1897. Instructor of Latin at the University of Michigan, professor of Latin and Roman archæology at Oberlin. Later, professor of Latin at the American School of Classical Studies at Rome. In Italy found a large collection of Latin inscriptions gathered by a parish priest and also gold treasure of the later Roman period. He wrote *Junior Latin Book*, with J. C. Rolfe. President of the Classical Association of the Atlantic States, 1914-15. Born, 1869. Died, March 18.

Dennison, William Henry Francis. Earl of Londesborough. Born, 1864. Died, October 30.

* Dewey, George.

* Dickinson, Donald McD.

* Dithmar, Edward Augustus.

Dobel, Horace. Senior member of the Royal College of Surgeons in London and consulting physician to the Royal Hospital for diseases of the chest. After practice in London he went in 1883 to Bournemouth, where R. L. Stevenson was among his patients. He wrote *Bacillary Consumption*, and *Medical Aspects of Bournemouth*. Eighty-nine years old. Died in February.

* Dos Passes, John R.

Doughty, Francis W. Author of more than 1200 detective stories, and creator of "Old King Brady" and "Nick Carter." He was also very much interested in numismatics, having written a book, *Cents of the United States*, which was for many years the leading text-book on the United States coinage of copper money. Sixty-seven years old. Died, October 31.

* Drome, Eaton S.

* Drumont, Edouard Adolphe.

Dukhonin, General. Former commander-in-chief of the Russian Army, who was deposed because of his refusal to request German army officials to enter into an armistice with the Bolsheviki. He was thrown from a rapidly moving train in the latter part of November.

* Dupuis, Nathan Fellows.

Durant, Pauline A. Widow of Henry F. Durant, with whom she founded Wellesley College. Age, eighty-five years. Died, February 12.

* Dwight, Henry Otis.

Eastman, Samuel C. Former president of the New York Bar Association. Graduated from Brown University in 1857 and received the honorary degree of Doctor of Laws from that institution in June, 1916. Age, eighty years. Died, August 31.

Eberle, Eugene A. An American actor who played in many leading productions during the sixty years of his career on the stage. He played in Shakespeare and was also associated with Joseph Jefferson, Otis Skinner, and Annie Russell. Age, 78 years. Died, October 23.

Edgcumbe, William Henry. Fourth Earl of Mount Edgcumbe, lord lieutenant and vice admiral of Cornwall. Since 1907 keeper of the Privy Seal to the Prince of Wales. He was a close friend and companion of the late King Edward. Born, 1832. Died, September 25.

* Edsall, Samuel Cook.

Eilers, Frederick Anton. A noted mining engineer and expert on metallurgy. Born in Germany, educated at the mining school at Clausthal and the University of Göttingen. He came to America in 1859. In 1883 he was president of the Colorado Smelting Co., where he remained for sixteen years. From 1890 to 1899 he was manager, director, and vice-president of the United Smelting and Refining Co. He was a member of the American Institute of Mining Engineers. Born, 1839. Died, April 22.

* Elgin, Victor Alexander Bruce.

* Ellinore, Queen of Bulgaria.

* Emery, William Hemsley.

Engelberger, Karl. A Swiss poet and novelist who died August 11.

Esparsa, Enrique. The last survivor of the Alamo. Esparsa was an eight year old lad who was with a group of Mexican women in a barricaded section of the chapel which was stormed by Santa Anna. Eighty-nine years old. Died, December 20.

Estabrook, Henry Dodge. Attorney and formerly solicitor for the Western Union Telegraph Co. Educated at Washington University. Appeared as counsel for that company in an important suit against the National Telegraph News Co. and others, and the decision in the case established a precedent concerning the piracy of news and the property rights to such. Born, 1854. Died, December 22.

* Evans, Edward Payson.

* Ezekiel, Moses.

Fagg, John Gerardus. A minister of the Collegiate Reformed Protestant Dutch Church of New York City. Graduated from the New Brunswick Theological Seminary. He was elected president of the General Synod and for years he held the office of president of the Board of Foreign Missions. Fifty-seven years old. Died, May 3.

* Fairchild, Edward Thompson.

* Falconio, Diomède C.

Farwell, Charles A. One of the leaders in the sugar industry in the South. His cane plantation holdings amounted to about 100,000 acres. Was an ardent protectionist. He was the president of the American Protective Tariff League. Died, May 17.

Feng, Madame. Wife of President Feng Kwo-Chang of the Chinese republic. She played an important part in the politics of China for five years. Before her marriage she was Miss Chow, principal of the Girls' Normal School at Tientsin and was famous as a lecturer and advanced thinker, with western ideals. Thirty-seven years old. Died, in September.

Ferris, George Hooper. A former pastor of the First Baptist Church at Tarrytown, N. Y., and author of: *The Fountain of the New Testament; The Elements of Spirituality; The Permanent Value of the Bible*. Fifty years old. Died, September 16.

Field, Lydia S. H. A pioneer in the woman suffrage movement and a prominent member of the Brooklyn Woman's Club. Born in 1838. Died, November 12.

Finlayson, John. An explorer for whom Finlayson River and Finlayson Lake in the Yukon territory were named. Native of Scotland. Prospected in mine gold in California and Oregon until he was eighty-six years old. Then went to British Columbia and Yukon territory, where he explored large areas which white men had never penetrated. Age, 105. Died, January 8.

Fletcher, John. Professor of Latin at the University of Toronto since 1895. Born in London, he came to Canada early and was educated at the Upper Canada College. He was graduated from the University of Toronto in 1872 and then studied at Balliol College, Oxford. In 1881 he was professor of classics at Queen's University, Kingston. Sixty-eight years old. Died, July 15.

Fletcher, William I. Librarian emeritus of Amherst College. Member of the American Library Association 1878-1917; president, 1892-93. Born, 1844. Died, 1917.

Floersheim, Otto. Composer and critic. Connected with *Musical Courier* from 1880 to 1904. Born, 1853. Died, in Geneva, Switzerland, November 30.

Flood, John F. Former inspector of the New York Police Department, from which he retired in 1913 at his own request. Fifty-seven years old. Died, November 16.

* Foraker, Joseph B.

* Forster, John Watson.

* Francis, John Collins.

Franklin, Sir Benjamin. A surgeon-general in the British army. Seventy-three years old. Died, February 17.

* Friedrich, Johannes.

* Frissell, Hollis Burke.

Frost, George Henry. Founder and for many years publisher of *The Engineering News*. Born in Ontario, Canada, and was graduated from McGill University as a civil engineer in 1860. A member of the American and Canadian societies of civil engineers. Seventy-nine years old. Died, March 15.

Fulda, Carl. A prominent physician and surgeon of Brooklyn, N. Y. Educated at the Polytechnic Institute in Brooklyn and the College of Physicians and Surgeons at Columbia University. After studying surgery at Berlin, Germany, he returned to Brooklyn and established a large practice. He was also on the surgical staff of the German Hospital, Brooklyn. Thirty-nine years old. Died, November 8.

* Funston, Frederick.

* Furst, William.

* Gallaudet, Edward Miner.

Gallaway, Robert Macy. Former president of the Southern Railway Company and identified with railroads since the Civil War. For six years he was a member of the Board of Education in New York City. Born, 1837. Died, November 13.

Gandara, Antonio de La. A noted French portrait painter whose subjects were the most beautiful women of France. Died, July 2.

Ganong, Gilbert W. Head of a large confectionery manufacturing company and lieutenant-governor of New Brunswick, Canada. Sixty-seven years old. Died, October 31.

* Ganz, Albert F.

Gathmann, Louis. An inventor who was often credited with the success of heavy German siege artillery in the present war. In 1901 an eighteen-inch gun was built for him on congressional appropriation, designed to fire shells with comparatively thin case and a very heavy charge of high explosive, which would work destruction by shock without piercing armor. United States ordnance experts decided against his invention and he sold it to Germany. Seventy-four years old. Died, June 3.

* Gaupp, E. W. T.

Genet, Edmond C. C. An American aviator who is credited with being the first American to die in France fighting under the American flag. He was a great-grandson of "Citizen" Genet, French minister to the United States just after the adoption of the Constitution. Died, April 19.

Giacone, Ernesto. Member of the Boston Grand Opera Company. He and his wife committed suicide in Baltimore on November 9. They were playing in *Madame Butterfly*.

Gilbert, Levi P. An editor and noted Methodist minister. He was at one time editor of the *Western Christian Advocate*, and had occupied pulpits in Columbus, Ohio, New Haven, Conn., and Seattle, Wash. Born, in 1852. Died, December 24.

Gilchrist, Robert M. An English novelist. He began to write at an early age. Among his writings are: *Passion the Plaything; The Stone Dragon; The Labyrinth; The Rue Bargain; The Wonderful Adventure; The Chase; Readnight; Weird Wedlock*; and *Scarborough*. Born in 1868. Died, April 4.

Gillig, Henry F. Founder of the American Exchange in Europe, a former capitalist and patron of grand opera. He was very well known among the nobility of Europe. President of the International Music Festival League. Age, sixty-two years. Died, August 29.

Glorieux, Alphonsus Joseph. Roman Catholic bishop of Boise, Idaho. He was born in Belgium and consecrated titular Bishop of Appoelonia in 1885 and transferred to the Sea of Boise. Age, 73 years. Died, August 25.

Glover, William F. Musician, composer, and orchestra leader. He was born in Dublin, Ireland, and received his education at Trinity College. For several years he was director and conductor of the Carl Rosa Grand Opera Company and came to this country in 1894 to conduct grand opera in Chicago and the West. Age, sixty-five years. Died, October 28.

Goodwin, C. C. Editor and author, and for twenty-one years editor of the Salt Lake City *Tribune*. He came to the West during the California gold rush. After the decline of the Comstock Lode he moved to Salt Lake City, where he served as editor of the *Tribune* and *Telegram*, and *Goodwin's Weekly*. He wrote among other books: *The Comstock Club; The Wedge of Gold*; and *The Divine Light*.

Gorell, Baron. Major of artillery in the British army. Baron Gorrell, who was the second to bear the title, was educated at Trinity College, Oxford, and at Harvard University. Before the war he was a prominent lawyer and was for three years a member of the Royal Commission on Divorce and Matrimonial Causes. Killed in action, January 16.

Goremykin, Ivan Logginovitch. Former premier of Russia. He was a conspicuous figure in the later years of the old régime in Russia. After the fall of Witte, Czar Nicholas called upon him to form a cabinet. It lasted only three months. In February, 1914, he again became premier and held the office for two years. After the revolution he was arrested and confined for a short time in the Fortress of St. Peter and St. Paul. He and his wife and his brother-in-law were murdered in the Cancasus in the latter part of October. Born in 1839.

* Goton, Frank.

Graham, James. Democratic leader of Canarsie, New York City, and a former New York State Assemblyman. He was a hatter by trade, having organized the Hatters' Union of Brooklyn. For a time he was president of the National Association of Hatters. Died, December 11.

Graham, Wallace, Sir. Chief Justice of Nova Scotia and associate counsel in preparing the British case for the Fisheries Commission at Washington in 1887-88. Age, sixty-nine years. Died, October 12.

Granniss, Robert A. Vice-president of the Mutual Life Insurance Company in 1906 and prominent in insurance circles the greater part of his life. He resigned from the above position following indictments found against him by the special insurance grand jury. Born in 1840. Died, December 26.

* Gratacap, Louis Pope.

Gray, James Richard. Editor-in-chief of the Atlanta *Journal*. Was graduated from the Georgia Agricultural College in 1878 and admitted to the bar in 1879 and practiced law from that year until 1901, when he became editor of the *Journal*. Born, 1859. Died, June 25.

* Green, Adolphus W.

Green, Martin. A pioneer railroad builder of the United States. He was especially active in developing the railways of the West during the middle of the last century. He was a close friend of President Lincoln. Ninety years of age. Died, July 31.

Greene, Evie. An English actress well known in the United States. Miss Greene played leading parts in *Kitty Grey; A Country Girl; The Duchess of Dantzig;* and *Floradora*. Died in September.

* Gregory, C. R.

* Grey, Albert Henry George, Earl.

Grey, Emile. A prominent harpist. She was born in Dublin, Ireland, and played for several seasons at the Metropolitan Opera House under the management of Maurice Grau. Later she was engaged by Mrs. Patrick Campbell and Sir Herbert Tree as harp soloist, and had appeared before Queen Victoria and King Edward. Died, October 2.

* Griffin, W. S., Rev.

Grimthorpe, Baron. Ernest William Beckett, second Baron Grimthorpe, was well known as the banker of Leeds. He was an authority on clocks and other timepieces, having written several books about them and made their study a lifelong pursuit. Born in 1856. Died, May 9.

* Grosvenor, Charles H., Gen.

Guiteras, Ramon. Surgeon and big game hunter. Graduated from Harvard Medical College. For a long time he was a professor of surgery in the Post Graduate Hospital and at the time of his death was visiting surgeon at the French Hospital. He was the author of books on surgery and trophies of his skill with the rifle are treasured by several museums. A year ago he was sent to Cuba by President Wilson to sound the sentiment of that republic on the war. Age, fifty-seven years. Died, December 13.

Gulley, Arthur G. For twenty-three years the professor of horticulture in the Connecticut College. Sixty-eight years old. Died, August 16.

Gunnison, Almon. President Emeritus of St. Lawrence University since 1914. He was educated at Tufts College and received his theological education at St. Lawrence University. LL.D. from Union College in 1902 and Tufts College in 1905. He served as a pastor at Bath, Me., and Brooklyn, N. Y. In 1889 he accepted the call to the presidency of St. Lawrence University. He was the author of *Rambles Overland* and *Wayside and Fireside Rambles*. Seventy-three years old. Died, July 1.

* Guthrie, George W.

* Guy, George Guillaume.

Guynemer, Georges. A famous French aviator. He was perhaps the most brilliant aviator the war had produced. He won the Cross of the Legion of Honor, the Military Medal, the War Cross, and almost every other honor which his country could bestow. One of the most spectacular achievements of Capt. Guynemer was the shooting down of three German airplanes in two minutes and thirty seconds. He was admitted to the French army as a volunteer after having been rejected five times by the medical inspectors. Twenty-one years of age. Died, in action over the Flanders front, probably on September 11.

Hackh, Otto. Musician, composer, and vocal teacher. At one time instructor at the Stuttgart Conservatory in Stuttgart, Germany. More than 400 of his compositions have been published in Europe and America. Sixty-six years old. Died, September 21.

* Hague, Arnold.

* Haight, Charles Coolidge.

Hale, John Howard. Widely known as the "Peach King." Organized the Hale Georgia Orchard Company, known as the largest peach growing concern in the world, with 350,000 trees. He was a lecturer and writer on horticultural subjects, and from 1900 to 1904 was the president of the American Pomological Society. Born, 1853. Died, October 12.

Hale, Walter. Actor, artist, and author. Had been leading man for Julia Marlowe, W. H. Crane, and James K. Hackett. Some of his etchings had been exhibited at the Paris Salon. Born, 1869. Died, December 4.

Hamilton, Frederick Tower, Sir. An admiral of the British Royal Navy. He entered the navy in 1869 and served in the Zulu war and the Egyptian campaigns and was second lord of the admiralty from 1914 to 1916, when he was appointed commander-in-chief at Rosyth. Sixty years old. Died October 23.

Hannahs, Elizabeth Helen. Well known as the psychologist and head of the testing department of the Neurological Institute. Educated at New York Normal College and Chicago University. Died, August 15.

Hardy, John Henry. Associate Justice of the Supreme Court of Massachusetts, to which he was appointed in 1896. Born, 1847. Died, October 11.

Hari, Mata. Dutch dancer and adventuress. Found guilty of being a German spy by a French court martial. She conveyed to the Germans the secret of the "tanks." Executed, October 15.

Harmony, David Butts, rear admiral, U. S. N., retired, distinguished in the Civil War, and the oldest living graduate of the United States Naval Academy. He became a midshipman in 1852, captain in 1875, commodore in 1885, and rear admiral in 1889. In 1888 and 1889 he was chief of the Naval Bureau of Yards and Docks. He was commander-in-chief of the Asiatic station in 1892 and 1893, being retired in June of the latter year. Born in 1832. Died, November 2.

Harrington, Lord. Charles Augustus Starhope, Eighth Earl of Harrington, was one of the largest land holders in England. He was aide-de-camp to the king and commander of the South Derbyshire Battalion of the Home Guard. Age, seventy-three years. Died, February 5.

Harvey, James Clarence. Poet, dramatist, and author. For many years on the staff of the *Century Magazine*. He was the author of several books of fiction and verse. Age, fifty-eight years. Died, September 29.

Haviland, William. An English Shakespearean actor who had played with Sir Henry Irving and Sir Herbert Tree. Later he organized his own company and toured England and South Africa. Age, fifty-nine years. Died, September 20.

* Hayes, Edward L.

Hazard, Frederick Rowland. President of the Solvay Process Co., and a director in many large industrial corporations. Graduated from Brown University. Prominent in Republican politics in New York State for many years. He was a member of several clubs. Died, February 27.

Hearn, David W., S.J. President of St. Francis Xavier's College, 1901-07. Educated at Boston College, a Jesuit institution. Was pastor of the Church of St. Ignatius Loyola in New York City. Born, 1861. Died, September 14.

* Hébert, Louis Philippe.

Heindle, Alexander. Well known as a cello soloist, and an original member of the Boston Symphony Orchestra. Age, eighty-three years. Died, September 4.

* Helmert, Frederick Robert.

Hemy, Charles Napier. A British marine painter. At an early age he entered a Dominican monastery, but then abandoned theology for art, which he studied at Antwerp. His first famous painting is called "Saved." Most of his later work was done in Falmouth Harbor. Among his best known paintings are "Homewoods"; "The Smelt Net"; "Land's End Crabbers"; "Alongshore Fishermen"; and "Spearing Fish." In 1910 he was elected a member of the Royal Academy. Seventy-six years old. Died, September 30.

* Hengelmüller von, Hengervár, Ladislaus.

Herrera, Don Antonio. Widely known as a newspaper publisher in Havana and a hero of the Cuban war of independence. Age, forty-three years. Died, July 16.

Herschel, William J., Sir. Discoverer and developer of the system of identification of finger prints. He began experimenting on finger prints in 1859 in India, but did not obtain general recognition until more than twenty years later. Age, eighty-four years. Died, October 24.

Higgins, David William. A well-known American and Canadian newspaper man on the Pacific Coast. He was born in Halifax and went to San Francisco and founded the San Francisco *Call*. He was publisher of the Victoria *Colonist* from 1860 to 1886, and for several years was editor of the Vancouver

World. Age, eighty-three years. Died, November 30.

Hill, Ebenezer J. Representative in Congress for eleven terms, as a Republican from Connecticut. He was graduated from Yale. Age, seventy-two years. Died, September 27.

* Hobson, Joseph.

Hodges, Henry Clay. U. S. A., retired. Graduated from the U. S. Military Academy in 1851. Was made a colonel in 1876. Retired in 1895 with rank of brgadier general. Was a Civil War veteran. Eighty-six years old. Died, November 3.

Hogan, Edmund. Founder of the Celtic League and considered an authority on the ancient language of the Celts. He held the chair of Irish language and history at University College, Dublin, from 1888 to 1898. Born, 1831. Died, December 20.

Hogarth, Georgina. Sister-in-law of Charles Dickens. She was the "Aunt Georgie" of the Charles Dickens family. Age, ninety years. Died, April 1

* Holton, Henry Dwight.

Honan, James H. An international authority on diseases of the heart and circulatory system. Was graduated from the Rush Medical College, Chicago, and later studied in Germany. He had lectured at Harvard, Johns Hopkins, and at the University of Michigan, and at the time of his death was a professor in the University of Georgia. Died, November 13.

Hone, Nathaniel. One of the foremost of the modern Irish painters. He studied in Paris, where he painted with Corot and Millet. Some of his pictures are in the National Gallery in Dublin and one is in the Luxembourg Gallery in Paris. Age, eighty-seven years. Died, October 18.

Hood, Basil. A British dramatic author, and soldier. Among his best known works are *The French Maid; The Rose of Persia;* and the English translation of *The Merry Widow.* He wrote copiously for the stage, mostly in a lighter vein. Age, fifty-three years. Died, August 7.

Hopkins, Anderson Hoyt. Formerly head of the Carnegie Library of Pittsburgh, from which he retired in 1908 on account of illness. Died, March 21.

Hostater, Julia. American concert soprano. Lived chiefly in Paris; regarded as one of the best singers of German *Lieder* in France. Died, in Paris, August 18.

Houghton, William Addison. Professor emeritus of Latin in Bowdoin College. Was graduated from Yale in 1878 and studied for two years in Berlin. From 1877 to 1882 he was professor of English literature in the Imperial University at Tokio. From 1884 to 1892 he taught at New York University. In the latter year he went to Bowdoin, from which he retired in 1907. Age, sixty-five years. Died, October 22.

Howard, George Henry. American pianist and teacher, and organizer of the Boston School for Teachers of Music. Born, 1843. Died, February 27.

Howard, Henry Fitz-Allen. See Norfolk, Duke of.

* Howland, William Bailey.

Hubbell, Edmond Cecil. Newspaper editor. Was employed by the New York *World, Press, Herald,* and *Journal,* and the Yonkers *Statesman.* Born, in 1854. Died, July 28.

Hubbell, Henry Wilson. U. S. A., retired. At the outbreak of the Civil War he enlisted with the Seventh New York Regiment and at the end of it was commissioned a lieutenant. At the time of the Spanish war he was colonel of the 201st New York Volunteers. Age, seventy-five years. Died, December 15.

Hughes, Peter. A prominent surgeon of Brooklyn, N. Y., receiving his degree from New York University in 1878. For a number of years he was demonstrator of anatomy at that institution. Age, sixty years. Died, September 30.

* Hull, Edward.

Hunter, W. Godfrey. Minister to Guatemala during the administration of President McKinley. An ardent supporter for the renomination of President Grant at the Republican National Convention in 1876. Age, seventy-six years. Died, November 2.

Huntington, Robert Watkinson. U. S. M. C., retired. He served with the marines during the Civil and Spanish American wars, and was promoted to be a colonel of marines in 1898. He retired from active service at his own request in 1900. Age, seventy-five years. Died, November 4.

* Hussein, Kemal Pasha.

* Husting, Paul O.

* Hyde, William DeW.

Ide, George Elmore. U. S. N., retired. Was graduated from the Naval Academy in 1865. Served on various ships until the outbreak of the Spanish American war, when he was in command of the *Justin.* In 1899 he went to Guam and made the harbor survey. Retired in 1901 after forty years' service. Seventy-one years old. Died, February 12.

* Ihne, Ernst Eberhard von.

Inten, Ferdinand von. A well-known pianist. Seventy years of age. Died, January 16.

Irwin, Bernard John Dowling. U. S. A., retired. Born in Ireland, but came to this country at an early age. Graduated from the New York Medical College in 1850 and served as medical inspector to the army of the Ohio. In 1890 he was appointed assistant surgeon-general. He retired in 1904 with the rank of brigadier general. Eighty-seven years old. Died, c. December 14.

Iwamura, Toru, Baron. A Japanese educator who studied at the Keio University and later in Paris and New York. He represented Japan at the St. Louis International Exposition and has been commissioner of the Fine Arts Exhibition of the Department of Education in Tokyo since 1907. He is the author of several books on fine arts. Born, 1870. Died in August.

Izer, George W. One of the leaders of modern Methodism and known as "the church builder of Methodism." Sixty-eight years old. Died, September 13.

Jacobs, William Leroy. An illustrator. Studied art in Paris, was a frequent contributor to the *Century, Scribner's, Life,* and other magazines. Forty-eight years old. Died, April 8.

* Jaeger, Gustav.

* Jameson, Leander Starr, Sir.

* Janeway, Theodore Caldwell.

Johnson, Helen Kendrick. Wife of Dr. Rossiter Johnson, editor and author, and prominent in many fields of literary endeavor. Ardent antagonist of woman suffrage. She published the *Roddy Books, Our Familiar Songs, Woman and the Republic,* and at one time was the editor of the *American Woman's Magazine.* Born in 1844. Died, January 8.

* Johnson, John G.

Johnston, William. British ship owner and builder and experimenter in coöperative labor. Sixty-eight years old. Died, August 27.

Jones, Israel C. Physician and medical superintendent of the Home for Incurables in New York City since 1876. Graduated from the Miami Medical College, Cincinnati, in 1874. Member of the New York Academy of Medicine. Born, 1851. Died, December 6.

Joullin, Amedie. Noted California artist, being best known by Indian paintings done in New Mexico. Studied in San Francisco and in Paris. He exhibited at the Paris Salon and received the palm from the French Academy, of which he was made an officer. He also painted California landscapes. Born, 1862. Died, February 3.

Kaarsberg, J. Surgeon and gynecologist, titular professor, University of Copenhagen. Fifty-one years old. Died, c. May.

* Katte, Walter.

Keary, Charles F. British novelist and writer. Wrote on history, philosophy, and antiquarian subjects, as well as fiction. He was formerly a member of the staff of the British Museum. Among his writings are *A Wanderer; The Lancrofts; The Dawn of History; Outlines of Primitive Beliefs; Norway and the Norwegians;* and *The Pursuit of Reason.* Died, October 26.

Kelcey, Herbert. An actor prominent on the New York City stage for thirty-five years. Was born in London and first appeared at Brighton, England, in 1877, in *Flirtation.* Came to America in 1882. From 1887 till 1896 he was a member of the Daniel Frohman Co. After 1898 he appeared as a co-star with his wife, who is known on the stage as Effie Shannon. His last engagement was in *Pollyanna,* New York City, in December, 1916. Born in 1856. Died, July 10.

Kendal, William Hunter. British actor and theatrical manager. After playing many prominent parts he became part owner and manager of St. James's Theatre, London, from 1879 to 1888. He toured the United States and Canada in 1889-95. Born, 1843. Died, November 6.

Kennedy, Thomas F. Rector of the American College in Rome. Was educated at the Tremont Academy, Norristown, Pa., and after studying at an American theological seminary, entered the American College in Rome, where he was ordained in 1887. In January, 1893, he was elected to the chair of dogmatic theology in the Seminary of Overbrook in the United States, and in 1901, at the suggestion of Cardinal Gibbons, was appointed rector of the American College in Rome. In the same year he was named Domestic Prelate by Pope Leo, and in 1904 Pope Pius appointed him Prothonotary Apostolic. Born, 1858. Died, August 28.

Kent, Charles W. Lecturer and author. For many years Dr. Kent had been head of the Linden Kent Memorial School of English Literature at the University of Virginia. He was the editor of Edgar Allan Poe's poems and president of the Poe Memorial Association. Fifty-six years old. Died, October 5.

Keppel, Leicester Chantry. Retired British rear admiral. He was engaged in the suppression of the slave trade in East Africa and served in the expedition up the Zambesi with Dr. Livingstone. Died, September 22.

* Kern, John North.

Kikuchi, Dairoku, Baron. Professor emeritus of the Imperial University of Tokyo and Kyoto. He was educated in Japan and at the University College School, London, and St. John's College, Cambridge. He was professor of mathematics in the Imperial University of Tokyo from 1877 to 1898, and dean of the Science College there in 1881, and was made president in 1898. A life member of the House of Peers since 1890 and a member of the Imperial Academy, Tokio. Born, 1855. Died in August.

Kittredge, George Alva. A pioneer in the operation of street railways in India. He lived in Bombay for more than half a century, going there as a representative of consular interests soon after his graduation from Yale. Age, eighty-four years. Died, December 26.

* Kocher, Theodore.

Koeppel, Emil. See *Necrology* list, GERMAN LITERATURE.

Knott, Richard Wilson. Editor and publisher of the Louisville *Evening Post* and of the *Home and Farm*, an agricultural paper. Sixty-eight years old. Died, December 27.

Kudlich, Hans. Founder of the Hoboken Academy and the German Club of Hoboken. Born in Austria. Banished from his country on account of radical ideas. In 1848 he studied medicine in Berne and became a physician. Ninety-four years old. Died, November 10.

* Labori, Ferdinand G. G.

Lamberton, John T. For many years librarian and bibliographer at the University of Pennsylvania. In 1881 he became associate editor of the American supplement of the Encyclopædia Brittanica. He was the editor and principal writer of *Historic Characters and Famous Events; Literature in the Nineteenth Century;* and *English Literature.* Seventy-eight years old. Died, July 27.

* Lampton, William J.

* Landouzy, Louis J. T.

* Lane, Harry.

Lawrence, Abraham Riker. Jurist of the New York Supreme Court for twenty-eight years and author of several law books. Was admitted to the bar in 1853 and was an unsuccessful candidate for mayor of New York City in 1872. He was elected Justice of the Supreme Court in the following year and reëlected in 1877 for another fourteen years. One of his best known legal works is *Compilation of the Tax Laws of the State of New York*. He was a member of the State Bar Association. Eighty-four years old. Died, February 14.

Lawrence, George P. For more than fourteen years a representative in Congress from Massachusetts. Graduate of Amherst College in 1880 and studied law at Columbia. Admitted to the bar in 1883. Member of Congress in 1899-1913. Fifty-eight years old. Died, November 21.

Lawyer, William S. Pioneer newspaper man and publisher. Established the Binghamton, N. Y., *Democrat* and wrote the *Broome County History*. Eighty-four years old. Died, November 3.

Le Duc, William Gates. A pioneer of Minnesota and one time United States Commissioner of Agriculture. He served in the Civil War, and was given the rank of brigadier general. Ninety-four years old. Died, October 30.

* Leipziger, Henry M.

* Le Sueur, W. D.

Letchworth, Edward, Sir. Grand secretary of English Free Masons and for many years chief steward of Her Majesty's Manners. He also served in the army, rising to the rank of captain. Born in 1833. Died, October 8.

* Levy, Joseph Leonard.

Lewisohn, Oscar. Financier and sportsman. His business had been mainly that of managing the fortune of over $1,000,000 that was left to him. He graduated from Harvard, and married Edna May, the actress. Born, 1885. Died, December 3.

Liard, Louis. Vice rector of the University of Paris. Was a noted professor of philosophy and the author of several standard French works on this subject. Was a member of the Superior Board of Public Instruction. Seventy-one years old. Died, September 21.

* Liliuokalani, Lydia Kamekeha.

* Lockwood, Belva A. B.

Loomis, William H. A widely-known American cartoonist and illustrator. Forty-five years old. Died, November 30.

* Louden, James.

* Luce, Stephen Bleeker.

Lyons, Joseph, Sir. A well-known restaurateur and philanthropist in London, Eng. Died, June 22.

* Mabon, William.

* McAlpin, Edwin A.

McAlpin, William L. For twenty years Paris correspondent of the London *Daily Mail* and later representing the London *Daily Mirror*. Well known to American tourists. Forty-nine years old. Died, August 29.

McBride, John. Widely known labor leader. At one time president of the American Federation of Labor. President of the Miners' Protective Association in 1877. Age, sixty-one years. Died, October 9.

McBride, Richard, Sir. K.C.M.G. Former premier of British Columbia, Canada, where he was born. Educated at Dalhousie University, Halifax. Admitted to the bar in British Columbia in 1892; K.C. in 1905. Became premier, 1903. Born, 1870. Died, August 6.

McCall, William T. Editor, author, and publisher. Was well known as a checker player, having written *The Literature of Checkers.* He also wrote: *You and I and the Stars; Life as It Is; A Plea for Shakespeare and Whitman.* Sixty-one years old. Died, November 14.

McCullagh, John. Former chief of the New York City police force and afterwards superintendent of elections there. Made a life-long attack on vice. Seventy-one years old. Died, January 3.

McDonagh, George R. A prominent physician in Toronto, Canada. Graduated from the Medical School of the University of Toronto and then studied in Europe. He was a specialist in throat, nose, and ear diseases. Before his death was professor of larynology at the university. Sixty-one years of age. Died, August 26.

* Macdonald, Sir William C.

McDowell, William F. A physician and chief pharmacist of the United States Immigration Department at Ellis Island. In 1892 he was connected with the United States Marine Hospital at Portland, Maine, and in 1898 was appointed a special disbursing officer at Havana. Sixty-five years old. Died, September 11.

McFaul, James A. Bishop of the Roman Catholic Diocese at Trenton for nearly twenty-five years. Born in Ireland, but came to this country when he was young and settled in New Jersey. Completed his classical education at St. Francis Xavier's College. Ordained to the priesthood, he was a pastor in many cities in New Jersey, and in 1890 became rector of the cathedral and chancellor of the diocese at Trenton. Became a bishop in 1894. Born in 1850. Died, June 16.

McKnight, Everett J. Former president of the Connecticut Medical Association and a prominent Yale graduate. He took his degree at the College of Physicians and Surgeons in New York in 1879. Sixty-two years old. Died, December 25.

McLellan, Archibald. Well known for many years as editor of Christian Science periodicals and a member of Christian Science Board of Directors. Was prominent in the development of Christian Science in Chicago and the State of Illinois. Born in 1857. Died, July 18.

McNichol, James P. Pennsylvania State Senator and Republican leader. Fifty-three years old. Died, November 14.

Macquoid, Katherine S. British novelist and writer of travel books. Her first work of any importance was *Piccalilli*, in 1862. She wrote a book a year until 1907. Ninety-three years old. Died, June 26.

McVail, David Caldwell, Sir. Former professor of clinical medicine at St. Mungo's College. He was the author of many contributions to the literature of medicine, notably regarding diseases of the respiratory organs. Age, seventy-two years. Died, November 4.

* MacVeagh, Wayne.

Maddern, Richard H. Musician and orchestra leader. Had charge of the orchestra of the Grand Opera House in St. Louis and Chicago. Later was at Daly's and the Academy of Music in New York City. Seventy-eight years old. Died, December 24.

* Makuen, George Hudson.

Manning, Moriah. Noted for a remarkable memory of her long life in Salem, Mass., which provided the basis for information contained in many antiquarian works. Ninety-one years old. Died, December 25.

* Marble, Manton.

* Maret, Henry.

Martindale, Joseph B. President of the Chemical National Bank, New York City, with which he was connected most of his life. After his death it was discovered that he had embezzled $300,000 of a depositor's account. Born, 1862. Died, July 7.

* Maskelyne, John Nevil.

* Masqueray, Emanuel Louis.

Mason, John W. Chairman of the Republican National Committee from 1872 to 1876. Up to a few months before his death he was a member of the West Virginia Debt Commission. Seventy-five years old. Died, April 23.

Massei, F. Professor of affections of the ear, nose, and throat at the University of Naples. Founded in 1881 *Archivie Italiano di Laryngologia*. Long leader in his field in Italy and was considered a great operator. He represented his specialty in the International Medical Congresses. Seventy years old. Died in April.

Mata, Hari, See Hari, Mata.

Matthews, Charles Henry. Prominent in the councils of the Presbyterian Church and for many years attorney for the General Assembly of the Presbyterian Church of America. Was educated at Princeton University. Died, December 11.

Matthews, Franklin. Professor of the Columbia University School of Journalism and formerly night city editor of the New York *Times*. Fifty-seven years old. Died, November 26.

Matz, Nicholas. Bishop of the Catholic diocese of Denver, having been consecrated a bishop in 1887. He was considered one of the most scholarly members of the American Catholic hierarchy and was an accomplished linguist. Sixty-seven years old. Died, August 9.

* Maude, Frederick Stanley, Sir.

May, Edward. U. S. N., retired. Was pay director in the United States navy when he retired in 1900 and received the rank of rear admiral for his services during the Civil War. Seventy-nine years old. Died, February 5.

* Mead, Elizabeth S.

Meakin, L. H. For twenty years on the staff of the Cincinnati Art Museum and widely known as a painter of New England landscapes. He exhibited and received awards for paintings at many expositions. He was a former president of the Society of Western Artists. Died, August 14.

Melvin, A. D. Chief of the Bureau of Animal Industry at Washington, D. C., and well known as the government's foremost figure in combating the foot and mouth disease. Graduate of the Chicago Veterinary College. In 1892 he was in charge of meat inspection in Chicago; became chief of the Meat Inspection Division in 1895; and assistant chief of the Bureau of Animal Industry in 1905. Fifty-five years old. Died, December 7.

Meredith, W. M. Former director of the Bureau of Engraving and Printing, but recently with the Treasury Department at Washington. Eighty-two years old. Died, December 24.

Merry Del Val, Rafael. Fotmerly an eminent diplomatist in the service of the Spanish government, having been Ambassador to London, the Vatican, and Vienna. He was the father of Cardinal Merry Del Val, and of Alphonse Merry Del Val, the Spanish Ambassador at London. Died, August 30.

Meyer, Paul. A French philologist. Founder of *Revue Critique*. Made comprehensive researches into the literature of the Middle Ages. Was editor of *Roumania*, of which he was a founder. Was a prolific writer. Born, 1840. Died, 1917.

* Mickle. William Julius.

Miller, C. Armand. A prominent minister of the Lutheran Church and pastor of St. Mark's Church of Philadelphia. He was the author of many devotional books. Fifty-three years old. Died, September 10.

Miller, George M. Noted churchman and corporation lawyer. Since 1890 president of St. Luke's Hospital, New York City, and one of the original trustees of the Corporation of the Cathedral of St. John the Divine, New York City. Studied law at Harvard in 1852 and 1853 and was admitted to the bar of New Jersey in the latter year and the New York bar the following year. Born, 1832. Died, November 14.

* Miller, William H. H.

* Mirbeau, Octave.

Mitchell, Anthony. Lord Bishop of Aberdeen and Orkney, Scotland. He was a graduate of King's College, Aberdeen University, where he took many prizes. He became chancellor of St. Mary's Cathedral, Edinburgh, in 1912. During the Boer War he served as a chaplain, and was attached to Lord Kitchener's staff. He wrote: *Verses; Tatters from a Student's Gown; History of the Episcopal Church in Scotland; Story of the Church in Scotland;* and *Biographical Studies in Scottish Church History.* Forty-nine years old. Died, January 18.

Mitchell, Charles W. A noted specialist in children's diseases and a member of the Faculty of the University of Maryland. Fifty-nine years old. Died, December 28.

Mitchell, Edmund. Author and journalist. Fifty-six years old. Died, March 31.

Mitchell, John K. Noted as a neurologist, writer of medical books and a university lecturer. Graduated from Harvard in 1880 and the University of Pennsylvania Medical School in 1883. He was connected with many medical institutions in Philadelphia, Pa. Fifty-seven years old. Died, April 10.

Monaghan, James C. United States counsel at Kingston, Jamaica, since 1914. Educated at Brown University. He was counsel from 1885 until 1889 at Mannheim, Germany, and then for seven years at Chemnitz. Sixty years old. Died, November 12.

* Montgomery, David.

* Moody, William Henry.

Morejon, M. O. Organizer of hospital and dispensary service of Madrid. Eighty-three years old. Died, c. April.

* Mörner, K. A. H.

Morrell, Edward Deveaux. Former judge advocate general of the National Guard of Pennsylvania, a former member of Congress, and a leading exponent of military training in the public schools. Born in 1863. Died, September 2.

Morrison, Morris. Leading Shakespearian on Yiddish stage. He commenced his professional career in Goritz, Austria, and later, through his histrionic talent, attracted royal notice. He came to this country in the last decade of the nineteenth century. Usually in his Shakespearian characterizations he played the leading part in German, the rest being given in Yiddish. Fifty-eight years old. Died, August 27.

Moscheles, Felix. An English painter. Received his artistic education in Antwerp and Paris, where his early pictures were exhibited. He had been president of the International Arbitration and Peace Association and also president of the London Esperanto Club. Born, 1838. Died, December 23.

Mosely, Alfred. For many years prominent in British educational matters. At the time of his death was head of the International Educational Committee. In 1906 he arranged for a delegation of 500 school teachers to visit the United States to study American teaching methods. Columbia University conferred the honorary degree on him in 1909. Born, 1855. Died, July 21.

* Moulton, James Hope.

Mudie, Allen. An English actor who is well known in America. His last appearance on the stage here was in *The White Feather* in 1913. When the war broke out he enlisted and rose to the rank of a captain. Mudie was brought to this country by Charles Frohman. He was killed in action in Flanders c. October 3.

Muller, Nicholas. Member of Congress from 1876 to 1878 and from 1898 to 1901. Democratic leader of New York City. Born in Germany in 1836. Died, December 12.

Munn, Charles Clark. Author of several novels of New England life. His first book, *Pecket Island*, was published in 1910, and his last work, *Camp Castaway*, was published in 1916. Sixty-nine years old. Died, July 8.

Muralt, L. von. Chief of Davos Sanitarium for Tuberculosis in Switzerland. Author of many works on neurologic and psychiatric subjects and on tuberculosis. Among twenty-four works is one published in 1913 on *Nervous and Mental Disturbances with Pulmonary Tuberculosis*. He himself contracted the disease at the age of twenty-five, spent twelve years at Davos and did much for the place. Member and officer of many societies. Made notably fine arrangements at Davos for interned war prisoners. Died in May.

Murray, John Clark. For thirty-one years professor of mental and moral philosophy at McGill University, Montreal, and for ten years at Queen's University, Kingston, Ontario. He was an authority on Scotch ballads and folk lore and a Fellow of the Royal Society of Canada. Born, in Scotland, fifty-five years ago. Died, November 21.

Murray, Oscar G. Former president of the Baltimore and Ohio Railroad and one of the best known railroad men in the country. Sixty-nine years old. Died, March 14.

Newham-Davis, Nathaniel. See Davis, Nathaniel Newham.

* Newlands, Francis Griffith.

* Niemann, A.

* Norfolk, Henry Fitz-Allen Howard, Duke of.

Norton, Roy. An American lawyer, mining engineer, and short story writer, killed in an automobile accident. Started writing in 1907 (*The Vanishing Fleets*). Wrote a novel a year and many short stories of adventure and mystery. Born, 1869. Died, July 15.

* O'Brien, John.

O'Brien, Patrick. A member of the British Parliament from Kilkenny since 1895. He was a Nationalist and whip to the Irish Party. He was a mechanical and marine engineer. Died, July 12.

O'Dwyer, Edward Thomas. The Roman Catholic bishop of Limerick, Ireland. Prominent figure in Irish politics for a generation. He was consecrated in 1886. Born, 1842. Died, August 19.

O'Kane, Michael A., S.J. Former president of Holy Cross College and since 1914 rector of the Church of the Jesu in Philadelphia. He was educated in Ireland before he came to this country and then went to Holy Cross, which he left to enter the Jesuits. Was president of Holy Cross from 1889 to 1892, and had also been connected with Georgetown University. Born in Ireland, 1849. Died, December 26.

Okuda, Gijin. Mayor of Tokyo, Japan, since 1915, and former minister of education. Died, August 21.

Oliver, Daniel. Botanist, formerly connected with the Kew Botanic Gardens. Died, 1917.

* Olney, Richard.

Osborne, Samuel Duffield. An American lawyer and author. Graduate of the Columbia Law School in 1883. He practiced law in Brooklyn, N. Y., for years and then removed to New York City, where he entered the literary field. Some of his writings are: *Engraved Jewels*; *The Spell of Ashtaroth*; *The Lion's Brood*. Fifty-nine years old. Died, November 22.

* Osterhaus, Peter J.

* Otis, Harrison Gray.

Owen, William Baxter. Professor of Latin at Lafayette College and member of the faculty for forty-five years. Seventy-five years old. Died, December 4.

Owens, Isaac B. One of the foremost authorities in the United States on copyright law. Forty-two years old. Died, August 1.

Paine, Francis B. H. One of the most prominent electrical engineers in the United States. Died, September 13.

Paladino, G. Professor of histology and general physiology at the University of Naples; Senator of the realm; president of various scientific societies; honorary degree from Rush Medical College, Chicago. Seventy-five years old. Died, c. March.

Pando, Joseph Manuel. General and former president of Bolivia. Died, June 20.

Pappenheim, A. Privat docent, University of Berlin. Noted for his work on blood diseases. Editor of *Folia hæmatologica*. Manual on chemistry of dyestuffs, an authority. Died, c. February.

Pardridge, Charles W. Multi-millionaire owner of department stores and known some years ago as a speculator in grain. Seventy-four years old. Died, November 7.

Parish, Henry. Retired president of the New York Life Insurance and Trust Company. He served in the above capacity for forty-four years. He resisted all inventions of modern progress, such as the telephone and typewriter, refusing to permit them where he could hear them. Eighty-seven years old. Died, September 18.

Parmly, Charles Howard. Member of the department of physics at the College of the City of New York, of which he was a graduate, and where he spent most of his life teaching. Born, 1868. Died, September 8.

* Parry, William H.

Parsons, Schuyler Livingston. Head of the large chemical firm of Parsons and Petit, New York City. Born, 1852. Died, November 4.

Partridge, William Eugene. Graduate of Wesleyan University and editor at various times of *The Iron Age*; *Mechanics*; *Anthony's Photographic Bulletin*; and *Metal*. Seventy-four years old. Died, November 21.

Pasco, Samuel. Former United States Senator from Florida. Graduated from Harvard in 1859. Served in the Confederate army and was taken prisoner. Admitted to the bar in Florida in 1867. Appointed United States Senator from Florida to succeed Charles W. Jones in 1887. Reëlected in 1893. Was a member of the Isthmian Canal Commission. Born, 1834. Died, March 13.

Patterson, Charles Brodie. Founder of the "New Thought" movement in the United States. Was also an author and lecturer on comparative religion. Wrote: *Seeking the Kingdom*; *New Thought Essays*; *Studies in Spiritual Power*; *Dominion and Power*; *What is New Thought?*; *A New Heaven and a New Earth*; *Living Waters*. His latest book, *The Rhythm of Life*, advanced a new theory with regard to healing through the science of color and musical vibrations. Sixty-three years old. Died, June 22.

* Payne, Oliver Hazard.

Peabody, James Hamilton. Ex-governor of Colorado. Elected in 1902. Reëlection in 1905 disputed. Although the legislature decided in his favor he only held the office one day and resigned. Born, 1852. Died, November 23.

Peabody, Robert S. A widely known American architect, at one time president of the American Institute of Architects. Born, 1845. Died, September 23.

Peck, C. H., Dr. For many years the botanist of the State of New York. Died, 1917.

Pennington, Alexander Cummings McM. Brigadier general, U. S. A., retired. Graduate of West Point in 1860. Veteran of the Civil, Indian, and Spanish American wars. Retired at the close of the last. Eighty years old. Died, November 30.

Pessard, Émile-Louis-Fortune. French dramatic composer; professor of harmony at the Paris Conservatory. Born, 1843. Died in Paris, in February.

Pettit, George Albert Joseph, S.J. President of the Novitiate of St. Andrew-on-the-Hudson. Society of Jesus, and for several years president of Fordham University. Born in Ireland, 1858. Died, February 28.

Pew, Howard. American musical manager, and organizer of Sousa's band (1892, with Blakely). Died, June 12.

* Phillips, Forbes Alexander.

Phister, Montgomery. One of the oldest dramatic critics in the United States. Was newspaper correspondent and author of several plays and magazine articles. Sixty-five years old. Died, July 9.

* Platt, J. J.

Pierce, George W. Known for many years as the "Soldier Evangelist," on account of serving in the Civil War and later being connected with Dwight L. Moody. Born, 1835. Died, September 24.

* Porter, Robert Percival.

Porter, William. Professor of Latin in Beloit College, Beloit, Wis. Ninety-seven years old. Died, October 28.

Postelwaite, Edward W. Assistant to the president of the Pennsylvania Railroad and one of the best known railroad executives in the United States. Sixty-seven years old. Died, November 14.

Potter, William P. Rear Admiral, U. S. N., retired. Graduated from Annapolis in 1869. He was advanced five numbers for "eminent and conspicuous conduct" in the destruction of the Spanish fleet in Santiago. He was at one time placed in charge of the Fourth Division of the Atlantic Fleet. Born, 1850. Died, June 21.

* Pratt, Bela L.

Prieur, A. Editor of the *France Médicale*. Founder of the Société française d'histoire de la Médicine. Fifty-two years old. Died, c. May.

Primrose, Neil. Youngest son of the Earl of Rosebery, and appointed whip by Lloyd George in the House of Commons in January. Thirty-four years old. Killed in action in Palestine, November 16.

Prittwitz und Gaffron, Max von. At outbreak of the war one of the most esteemed generals in the German Empire, but his failure to stem the Russian invasion of East Prussia caused his removal. He was succeeded by von Hindenburg. Born, 1848. Died, c. April 1.

Putnik, Radomir. Field Marshal and former chief of general staff of the Serbian army. Also former minister of war. He was with the Serbian forces when they retreated into Albania. Died, May 17.

Radolin, Prince von. Former German Ambassador at Paris. Served in this capacity from 1901 to 1910, and handled the delicate Moroccan affair. Died, July 20.

Raggio, Andrew Paul. Professor of Spanish and Italian at the University of Maine. Graduate of the University of Texas. Ph.D. Harvard, 1904. Died, December 21.

Ramsay, Frank Morris. An author and playwright, whose pen name was Ramsay Morris. Author of *The Tigress* and *The Irish Gentleman*. Died, November 5.

Ranavalona, Queen. Former queen of Madagascar. Died, May 24.

* Reed, Allen V.

* Reszke, Edouard de.

Reynolds, Elizabeth C. For nearly thirty years the president of the First Woman's Christian Temperance Union. Eighty-one years old. Died, October 6.

Richardson, Frank. Noted British barrister and novelist. Born in 1870. Died, August 1.

Riedinger, J. Professor of orthopedics, University of Würzburg. Fifty-two years old. Died, c. April.

Rives, George Lockhart. A widely known lawyer of New York City, and at one time assistant secretary of State under President Cleveland. Educated at Columbia and Cambridge, England. Admitted to New York State bar in 1874. Trustee of Columbia University and at one time corporation counsel of New York City. Born, 1849. Died, August 18.

Robie, Edward. Pastor of the Congregational Church at Greenland, N. H., for sixty-five years. Born, 1821. Died, September 22.

Robinson, Anna. Former Lady Rosslyn and at one time a noted stage beauty. Born, 1871. Died, October 5.

Robinson, Charles Mulford. Widely known in England and America as a city planning expert. Author of: *The Improvement of Towns and Cities; Modern Civic Art; The Width and Arrangement of Streets.* Since 1916, honorary member of the Town Planning Institute of England. Died, December 30.

Robinson, Mary. Magazine writer and author of books on travel. Eighty-two years old. Died, December 28.

* Rockefeller, Frank.

Rodgers, Frederick. Rear Admiral, U. S. N., retired. Graduated from Annapolis in 1857. He served through the Civil War and became a lieutenant commander in 1866, captain in 1890, commodore in 1898, and rear admiral in 1899. During the Spanish-American war he was president of the Board of Inspection and Survey, and in 1901 was senior squadron commander of the Asiatic fleet. Born in 1842. Died, November 8.

* Rodin, Auguste.

Roeber, Eugene P., Dr. Editor of the *Metallurgical and Chemical Engineering*, and one of the founders of the American Electro-Chemical Society. Born in Germany, in 1867; educated at Jena, Halle, and Berlin. Died, October 18.

Roebling, Ferdinand W. Son of builder of the Brooklyn Bridge, New York City, and well known as a manufacturer of wire rope. Born, 1842. Died, March 16.

Rogers, Charles C. Rear Admiral, U. S. N., retired. He served on the *Resolute* in the Spanish-American war and received medals for conduct in action off Santiago and Mazanillo. Sixty-one years old.

Rogers, Robert. Member of the legislature of Manitoba, Canada, and minister of interior in the Borden Cabinet. Born, 1864. Died, August 20.

Romei, Francesco. Assistant conductor and musical secretary of the Metropolitan Opera House in New York City. Acted as conductor in many of the principal theatres in Europe. Forty-nine years old. Died, December 18.

* Rosenthal, Toby E.

Rothschild, Leopold de. Son of founder of the banking house of the same name and considered the social and sportsman member of the house. Seventy-two years old. Died, May 29.

Rudorff, Ernst Friedrich Karl. German composer. Born, 1840. Died, in January.

Russell, John Edward. Mark Hopkins professor of mental and moral philosophy at Williams University, from which he graduated in 1872. Also studied at Yale and Berlin. From 1885 to 1889 professor of Biblical theology at Yale. Sixty-nine years old. Died, February 25.

Russell, L. E., Dr. Formerly president of the National Medical Association and a nationally known physician and surgeon. Sixty-six years old. Died, August 2.

* Ryder, Albert P.

Salmon, Alvah Glover. An American lecturer on music and an authority on Russian music. Born, 1868. Died, September 17.

Salmon, Charles Carty. Speaker of the Australian House of Representatives in 1909-10. Died, September 17.

Saluskin, Chief. Last chief of the Yakinma Indians. Ninety years old. Died, December 25.

* Sanborn, Franklin B.

Sanborn, Katherine Abbott (Kate Sanborn). An author and teacher. For five years professor of English literature in Smith College. Among her notable writings are: *Round Table Series of Literary Lessons; Adopting an Abandoned Farm; Vanity and Insanity; The Rainbow;* and *A Truthful Woman in Southern California.* Born, 1839. Died, July 9.

Sands, Benjamin Aymar. Former president of the University Club, New York City, and an active leader in reform movements. Member of many clubs and a director in several financial institutions. Sixty-three years old. Died, May 1.

* Satterlee, Francis Le Roy.

Saward, Frederick Edward. An authority on coal trade information and the editor and owner of *The Coal Trade Journal*, which he founded forty-eight years ago. He had been blind for several years. Born, in London, 71 years ago. Died, December 5.

Schley, Grant B. Wall Street millionaire and philanthropist. In 1907 became prominent through purchase and consolidation of the Tennessee Coal and Iron Company by the Steel Corporation. Seventy-two years old. Died, November 22.

Schmittberger, Max F. Chief inspector of the Police Department, New York City, and connected with the force there for forty-three years. Born, in Germany, seventy-five years ago. Died, October 31.

Schollaert, M. J. President of the Belgian Chamber of Deputies, and former premier. While he was premier the annexation treaty, by which the Belgian Congo became a territorial possession, was passed. Died, June 29.

Scholz, Bernhard. German musical composer. Born, 1835. Died, in Munich, in January.

Schouler, John. Rear Admiral, U. S. N., retired. Graduated from the Naval Academy in 1864. He was chief of staff of the North Atlantic Fleet, 1895-97.

Schulthess, H. Physician of Zurich, Switzerland, whose work on heart diseases and the sphygmometer of photography of the pulse are important. Work on heart disease in Swiss army based on over 1,000,000 separate examinations on 21,000 men. Age, fifty-four years. Died in February.

Schweitzer, Hugo, Dr. Business man and chemist in New York City. Born in Pitschen, Germany, in 1861. Studied chemistry at Breslau, Berlin, Freiburg, and Heidelberg. For some time he was assistant to Bunsen. Died, December 23.

Scott, Walter Quincy. President Emeritus of Ohio State University and prominent in religious work in New York City. Died, May 9.

Scully, John, S.J. President of Fordham University from 1888 to 1892. Seventy-two years old. Died, December 26.

Seely, Henry M. Professor Emeritus of chemistry and natural history at Middlebury College. Was head of this department for thirty-four years. Eighty-eight years old. Died, May 4.

* Seligman, Isaac Newton.

* Selous, Frederick C.

* Shaw, John Banks.

Sheakly, James. First governor of Alaska. Ninety years old. Died, December 10.

* Sheehan, William Francis.

Sill, Henry A. Professor of history at Cornell University. He was graduated from Columbia University in 1888 and then studied at Oxford and Halle. Before going to Cornell, he taught for a time at Hobart College. Forty-nine years old. Died, in August.

Smith, Mary Sedley. An actress known on the American stage for three generations as Mrs. Sol Smith. Eighty-seven years old. Died, June 15.

Smith, W. G. Plant illustrator and fungologist. Died, 1917.

Spear, Ellis. Brigadier-general, U. S. A., and former United States Commissioner of Patents. He was a veteran of the Civil War. Born, 1834. Died, April 3.

* Spence, Francis S.

Spring, Leverett Wilson. Professor Emeritus of English literature at Williams College, from which he was graduated. Born, 1840. Died, December 23.

Sproule, Thomas Simpson. Member of the Canadian Senate, and formerly speaker of the Lower House, and also at one time grand master of the Loyal Orange Association of British America. Seventy-four years old. Died, November 10.

Stanculeanu, George. A noted Rumanian physician and surgeon, who had been in the United States for some time lecturing in behalf of the Rumanian government. He was an eye specialist. Died, July 16.

Stanley, Joshua. One of the best known gypsy leaders in the United States. One of the few survivors of the Stanley band which broke off from the old Romany tribe and came to this country. Eighty years old. Died, November 5.

Starhope, Charles Augustus. See Harrington, Lord.

Starrett, Theodore. Pioneer skyscraper builder and founder of the large contracting concern of Thompson-Starrett Co., in New York City. Fifty-two years old. Died, October 9.

Stengel, Guillaume. Polish pianist and husband of Marcella Sembrich. Born, 1846. Died, May 15.

Stewart, Thomas J. Adjutant-general, for twenty-two years the administrative head of the National Guard of Pennsylvania, and former national commander-in-chief of the Grand Army of the Republic. Born, in Ireland, 1848. Died, September 11.

* Still, Andrew Taylor.

* Stimson, Lewis Atterbury.

* Stott, Henry Gordon.

* Stuart, Ruth McE.

Stubenrauch, Arnold Valentine. Professor of pomology in the University of California, and formerly connected with the United States Department of Agriculture. Noted for work on the cold storage and marketing of fruits. Forty-seven years old. Died, February 13.

Studebaker, John Mohler. A founder of one of the greatest vehicle works in the world. Born, 1833. Died, March 16.

* Sturmer, Boris Vladimirovitch.

Sweet, Clinton W. A manufacturer of overalls and the founder and editor of the *Record and Guide*, a New York City real estate guide, and of the *Architectural Record*. Seventy-five years old. Died, September 24.

Swete, Henry Barclay. Emeritus professor of divinity, Cambridge University, England. He was the author of many works on religious subjects. Eighty-two years old. Died, May 9.

Sykes, Frederick Henry. A Canadian born educator, who in 1918, became the head of the Connecticut College for Women. Also taught at Toronto University, Western University, London, Ontario, and Columbia University. Born, 1868. Died, October 14.

Tait, Sir Melbourne McT. A noted Canadian jurist. Seventy-four years old. Died February 10.

Tan, "Prince." One of the most famous actors the Chinese stage has ever known. He was even a greater singer than an actor. Seventy-two years old. Died, May 12.

* Taylor, William, Sir.

Teal, Ben. A prominent stage director, long connected with David Belasco and Klaw and Erlanger. Sixty years old. Died, April 20.

Thayer, Rufus Hildreth. Judge of the United States Court at Shanghai, from 1909 to 1913, and former judge advocate general of the National Guard of the District of Columbia. Graduate of the University of Michigan. Born, 1850. Died, July 12.

Thomas, D. D., Rev., Dr. Twice president of the Baptist Convention of Ontario and Quebec. Seventy-five years old. Died, October 25.

Thornton, John R. Former United States Senator from Louisiana. Served as a private in the Confederate army during the Civil War, after which he practiced law. He was appointed United States Senator in 1910, to the seat left vacant by Samuel D. McEnery. Served until 1915. Seventy-one years old. Died, December 28.

Tooker, William Wallace. An authority on Indian nomenclature and antiquarian archæology. One of the founders of the American Anthropological Society. Sixty-nine years old. Died, August 2.

* Torrington, Frederick Herbert.

* Tree, Sir Herbert Beerbohm.

Turner, William Greene. A noted American sculptor. Graduated in 1857 from the Baltimore College of Dental Surgery. He served in the Civil War and after it moved to Florence, Italy, where he became a sculptor. Among his noted works are a bust of Commodore Perry, the hero of Lake Erie, "Transition," and "Robinson Crusoe." Born, 1833. Died, December 23.

Turcas, Jules. An American landscape artist, whose works have often been exhibited in New York, Pittsburgh, and Philadelphia. Sixty-three years old. Died, March 16.

Tweed, Charles Harrison. Lawyer and retired banker. Seventy-three years old. Died in New York, October 11.

Tweedie, L. J. Former lieutenant-governor and premier of the province of New Brunswick, Canada. Seventy-seven years old. Died, July 15.

* Tyler, E. B., Sir.

Ulrik, F. F. Oldest physician in Denmark. Led in movement for more hygienic homes for working classes and for sickness and old age insurance. Ninety-nine years old. Died, c. May.

Unsted, James S. H. Former managing editor of the New York *Times* News Bureau Association and one of the best financial writers in the New York district. Born, 1859. Died, October 8.

* Upshur, John Henry.

Utley, Henry Munson. Librarian of the Detroit Public Library and for many years a leader in municipal libraries. Graduate of the University of Michigan. Born, c. 1841. Died, 1917.

Van Buren, James Heart. Former Protestant Episcopal bishop of Porto Rico. Educated at Yale and the Berkeley Divinity School. Consecrated bishop in 1902. Born, 1850. Died, July 9.

Van Zile, Philip T. Former United States district attorney for Utah and prominent for the prosecution of the Mormon cases. Since 1891 dean of Detroit College of Law. Born, 1844. Died, October 26.

* Viljoen, Benjamin J.

* Vilmorin, Philippe Leveque.

Vitali, D. Formerly professor of pharmaceutical chemistry at the University of Bologna, Italy. Author of over 200 works on pharmaceutical and chemical subjects, many of which have been translated into other languages. Eighty-five years old. Died, c. April.

* Wagner, Adolph.

Waldenstrom, Paul Peter. Well-known Swedish dissenting churchman and politician. Received degree of doctor of theology from Yale in 1889. Seventy-three years old. Died in August.

* Walker, William D.

Walker, William Hall. Former head of the Kodak, Limited, London, and until his retirement a member of the Eastman Kodak Company, Rochester. Was also a philanthropist, having given $100,000 to Stevens Institute of Technology, and $50,000 to the Red Cross since the war broke out.

Wall, Franklin Paine.

Wallace, William James. United States Circuit Court Judge for the second judicial circuit, 1882-1907. Born, 1837. Died, March 11.

Walsh, Robert Jay. Ex-secretary of state of Connecticut and justice of the Common Court of Pleas there in 1891-1901. Sixty-three years old. Died, December 7.

Ward, R. Halstead. Ph.D., F. R. M. S. An educator and botanist of international note. For twenty-six years professor of botany at the Rensselaer Polytechnic Institute and member of many American and foreign societies. Member of the International Medical Conference at Berlin some years ago. Eighty years old. Died, October 28.

Warren, Herbert L. Head of the department of architecture at Harvard University. Was a Fellow of the American Institute of Architects. Born in England sixty years ago. Died, June 27.

* Warrender, George John Scott.

* Waterhouse, John William.

Watmough, James H. Rear admiral, U. S. N., retired. Educated at the University of Pennsylvania. Last survivor of the frigate *Constitution* and fleet paymaster with the South Atlantic Squadron during the Civil War. Ninety-five years old. Died, January 18.

Weed, George W. Prominent engineer and manufacturer in New York City. Eighty-eight years old. Died, April 7.

Weil, Jonas. Jewish philanthropist and founder of Lebanon Hospital. Gave away nearly $1,000,000 to various charities. Eighty years old. Died, April 11.

Weil, Richard, Maj. Chief of staff of Camp Wheeler in Georgia, and before the war a prominent physician in New York City. Also professor of experimental medicine in Cornell Medical College. Educated at Columbia University, and Universities of Vienna and Leipzig. Forty-one years old. Died, November 19.

Weiss, Edmund. Astronomer and emeritus director of the Vienna Observatory. Eighty years old. Died, June 21.

Welander, Edward Wilhelm. Professor of skin and venereal diseases at the University of Stockholm until he retired. Founded Welander homes for children with inherited syphilis at Christiania, Copenhagen, Berlin, and Vienna. Seventy-seven years old. Died, c. April.

* Welch, James.

Wells, Brooks Hughes. A leading American gynecologist. Educated at Columbia University and emeritus professor of gynecology at Polyclinic Hospital, New York City. An editor of the *American Journal of Obstetrics and Diseases of Women*. Fellow of the American Gynecological Society. Captain in the Medical Officers' Reserve Corps. Fifty-seven years old. Died, July 6.

* Wells, Charles.

Wells, Julian L. An American engineer prominent in Mexico, Hawaiian Islands, and the United States. Died, October 27, in Santo Domingo.

Wendell, Evert Jansen. Once a famous Harvard athlete, later a woolen commission merchant, and for the last twenty years of his life interested in the uplift of young men. He died in France, where he had gone to aid in the organization of the American College Union of Paris. Fifty-seven years old. Died, August 28.

Wenzell, Albert Beck. An American illustrator of magazines and novels. Born, 1864. Died, March 5.

Westmeyer, Friedrich. One of the most active leaders of the anti-government faction of the German Socialists. Died in December.

Weston, John F. Major general, U. S. A., retired. Veteran of the Civil and Spanish wars and a campaigner under Custer. Born, 1845. Died, August 2.

* Wheatley, Henry Benjamin.

Wheeler, Albert Gallatin. Well-known subway and transportation expert in the United States. Born, 1854. Died, September 24.

White, Charles Joyce. Professor of mathematics at Harvard University. Author of *Elements of Theoretical and Descriptive Astronomy.* Born, 1839. Died, February 12.

White, John Williams. Professor emeritus of Greek at Harvard University. Honorary president of the Archæological Institute of America. Fellow of the Institute of Arts and Sciences, and a member of a number of British and German archæological societies. Seventy-eight years old. Died, May 9.

Whitney, John D., S.J. Former president of Georgetown University and prominently identified with the Jesuit Order. Died, November 27.

Wicker, George Ray. Professor of economics at Dartmouth College. Extensive writer on economic subjects. Died, November 25.

Williams, Mosely H. A noted Congregational preacher and widely known as an author on religious subjects. Seventy-eight years old. Died, November 9.

Willits, George Sidney. Rear admiral, U. S. N., retired. Graduated from Naval Academy in 1875. Member of American Society of Naval Engineers. Sixty-four years old. Died, May 3.

Wills, Nat M. A well-known actor in New York City. Forty-four years old. Died, December 9.

* Winter, William.

Witherbee, Frank Spencer. Engaged in iron mining and active in Republican politics. Member of many clubs and societies. Born, 1852. Died, April 13.

Wolinski, Barnett. A Russian rabbi who came to America forty years ago. One hundred and thirteen years old. Died, September 25.

Woodward, Joseph H. Retired iron and steel capitalist and reputed to be the wealthiest man in Alabama. Seventy-five years old. Died, December 15.

Woolridge, Henry Elias. English musicologist: a successful painter until 1894, when he devoted himself to musical research, and published several valuable editions of early English music: he wrote the first two volumes of the *Oxford History of Music.* Born, 1845. Died in London, January 13.

Wordsworth, William. Oldest surviving grandson of poet, and himself a scholar and poet. Studied at Balliol College, Oxford: entered Indian Civil Service in 1861; retired, 1890. C. D. E. Was for a long time president of Elphinstone College, Bombay. Eighty years old. Died, March 7, in Rome.

* Wright, Hamilton.

Wright, John Dunbar. A millionaire artist, amateur photographer, and philanthropist: at one time in the oil business. Fifty-five years old. Died, October 6.

Württemburg, Philip Alexander, Duke of. Head of the senior ducal line of the Württemburg family. Born, 1838. Died, October 11.

Young, Warren S. For thirty-six years social secretary of the White House, Washington, D. C. Seventy-three years old. Died, November 18.

Youngman, Robert Barber. Teacher for forty-nine years at Lafayette College and professor emeritus of the Greek language and literature. Born, c. 1840. Died, March 1.

* Zamenhof, Ludwig.

* Zeppelin, Ferdinand A. A. H.

Consult also the *Necrology* lists in such articles as LITERATURE, ENGLISH AND AMERICAN, GERMAN LITERATURE, PHILOSOPHY, etc.

NEGRI SEMBILAN, THE (NINE STATES). A federation of states composing a state of the Federated Malay States (q.v.).

NEGRO EDUCATION. See EDUCATION IN THE UNITED STATES.

NEPAL. An independent kingdom in the Himalayas, bounded by Tibet on the north, Sikkim on the east, and British India on the south and west. Area, about 54,000 square miles. Estimated population, 3,000,000; some estimates are higher. The exports include hides and skins, drugs, gums, dyes, jute, pulse, and cereals. According to British India returns, exports from India to Nepal were valued at £1,276,000 in 1914-15 and £1,379,000 in 1915-16; imports from Nepal to India, £2,565,000 and £2,632,000 respectively. Nepal has a standing army of about 30,000. The capital is Katmandu, with some 50,000 inhabitants.

NEPTUNE. See ASTRONOMY.

NETHERLANDS, THE (or HOLLAND). A maritime kingdom of central Europe, situated on the North Sea, in lat. 50° 46′-53° 34′ N. and long. 3° 22′-7° 14′ E., consisting of eleven provinces. The Hague is the capital.

AREA AND POPULATION. The total area, including the rivers of Zeeland and South Holland, the Zuider Zee, the Dollart, and the Wadden (the shallows extending along the shores of Friesland and Groningen as far as the Dollart), based on a low-tide planimetric calculation, is 40,828.71 square kilometres (15,764 square miles). The area by provinces, and the population according to the census of December 31, 1909, together with the population as calculated December 31, 1915, are given in the table below.

	Sq. km.	*1909*	*1915*
North Brabant	4,972.84	623,079	684,146
Gelderland	5,024.40	639,602	691,716
South Holland	2,981.00	1,390,744	1,566,724
North Holland	2,762.01	1,107,693	1,220,624
Zeeland	1,831.75	232,515	242,135
Utrecht	1,363.21	288,514	313,644
Friesland	3,220.25	359,552	376,471
Overijssel	3,354.50	382,880	418,458
Groningen	2,283.52	328,045	350,501
Drenthe	2,662.09	172,318	192,386
Limburg	2,194.68	332,007	392,543
Total	32,600.25*	5,858,175	6,449,348

* 12,587 square miles.

In 1917 a project was afoot for the draining of some 530,000 acres of the Zuider Zee to provide a new province. The bill was passed September 9, 1916.

The urban population in 1915 numbered 2,634,298; the rural, 3,815,050. According to nationality, the elements of the population are Dutch, 5,788,193; Germans, 37,534; Belgians, 18,338, etc. The larger cities (communal population as calculated December 31, 1915) follow: Amsterdam, 616,589; Rotterdam, 480,240; The Hague, 322,081; Utrecht, 130,010; Groningen, 84,448; Haarlem, 72,362; Arnhem, 67,096; Leiden, 59,733; Nimeguen, 62,372; Tilburg, 56,798; Dordrecht, 50,718; Maastricht, 39,758; Apeldoorn, 41,465; Leeuwărden, 40,277; Bois-le-Duc, 36,625; Enschede, 39,275; Delft, 35,900; Schiedam, 35,977; Zwolle, 34,551; Hilversum, 34,326; Emmen, 34,002; Deventer, 30,775; Breda, 28,099; Helder, 29,768. There were (1915) 42,651 marriages, 107,423 births, and 79,613 deaths, 6625 stillbirths; excess of births over deaths, 87,810. Emigrants numbered in 1915, 1074 (of whom 657 adult males, 278 adult females).

PRODUCTION. The area (in hectares) devoted to principal crops, and the production (in metric quintals) for two years, are as follows:

	Hectares		*Quintals*	
	1917	*1916*	*1917*	*1916*
Wheat ..	49,555	54,203	939,586	1,281,796
Rye	187,255	199,855	3,037,416	2,913,674

	Hectares		*Quintals*	
	1917	*1916*	*1917*	*1916*
Barley ..	20,863	24,203	560,284	516,484
Oats	150,343	138,082	2,698,908	2,905,688
Flax * ..	11,971	15,050	58,324	99,085
Beets † ..	46,453	64,715	16,561,815	17,168,380
Potatoes	169,539	171,888	24,455,662	24,088,174

* Fibre production; seed 1917, 56,311 qs. and 1916, 98,204 qs.

† Sugar beets.

In the following table are given fixed maximum prices for sales of cereals in florins per quintal: wheat for all bread purposes, rye for sweetened bread, barley A for fodder and B for distilling.

	Wheat	*Rye*	*Barley A*	*B*
September 1916.....	17.75	15.70	18	19
October 1916	19	15.70	18	19
November 1916	19	15.70	16.75	21
December 1916	19	15.70	16.75	22.50
January. 1917	21.20	15.70	17.25	22.50
February 1917	21.20	24.64	17.25	22.50
March 1917	19.66	24.64	17.25	22.50
April 1917	28.66	24.64	17.25	22.50

The results of the census of cattle, sheep, and pigs on April 1, 1917, as compared with June, 1913, are given below:

	1917	*1913*	*Difference*
Bulls	29,136	24,058	5,083
Milch cows	1,234,375	1,109,679	124,696
Fatted calves	15,581	46,661	31,080
Other fat stock....	50,126	96,366	46,240
Young stock over one year	685,894	404,619	281,275
Young stock under one year	285,895	415,221	129,326
Total cattle	2,801,007	2,096,599	204,408
Sheep	520,810 *	842,018	....
Pigs	1,185,565	1,850,204	164,639

* Exclusive of lambs born in 1917.

Nearly all of the fishing interests of the Netherlands announced a prosperous year in 1916. In spite of limitations due to the war, the catches were large and the prices were high. The Dutch herring fleet announced a more prosperous year for 1916 than any since 1913. The total proceeds to the shipowners in the herring business were estimated at $14,800,000 in 1916, as against $12,000,000, $5,000,000, and $6,800,000 in 1915, 1914, and 1913, respectively. The largest herring shipments are made from Scheveningen.

Commerce. The developments that took place in the commerce and industries of the Netherlands during 1916 reflect the influences of the European War. The country is so situated geographically that its commercial activities have been affected by the measures taken by one or more of the belligerents. The fact that its commerce has been restricted and curtailed has caused factories to be built and has strengthened Dutch industry to such an extent that it will leave a permanent effect upon the foreign trade of the country.

Imports of most products during 1916 were reduced to what was actually needed in the country. The transit trade was largely brought to a standstill. Regular shipping lines have suspended much of their ordinary business and have undertaken to transport the grain needed by the government. The Netherlands is practically a free-trade country. The few duties levied have a fiscal rather than a protective object. The total imports for consumption and exports of domestic produce are seen below for three years (precious metals included), in guilders (par value of the guilder, 40.196 cents):

	1911	*1912*	*1915*
Imports.	3,333,000,000	3,613,000,000	2,111,000,000
Exports.	2,782,000,000	3,113,100,000	1,749,000,000
Transit .	13,696,000,000	14,706,000,000	6,549,000,000

The Dutch foreign trade statistics, which are generally available in April or May of the year following the report year, had not been published. Generally speaking, the imports from belligerent countries decreased in 1916 as compared with the years 1913, 1914, and 1915. The principal imports from the United States, such as breadstuffs, cotton, flour, edible oils, etc., made a favorable showing, because these materials could not be obtained from other sources on account of the war. Dutch exports to belligerent as well as to neutral countries continued to decrease during the year, principally on account of lack of adequate communication with the colonies. Representative imports for consumption and exports of domestic produce are shown below (values in thousands of guilders, 1915):

Imports	*1,000 gl.*	*Exports*	*1,000 gl.*
Cereals, etc....	218,238	Iron and steel..	72,079
Iron, etc.	181,411	Flour, etc.	11,946
Textiles	165,022	Textiles	151,062
Fuel	69,882	Copper	2,628
Rice, etc.	17,721	Paper	107,135
Copper	9,157	Rice flour	1,027
Wood	41,122	Margarine	126,468
Gold, etc.	286,973	Sugar	57,879
Fertilizers	26,446	Coffee	74,200
Seeds	51,564	Butter	42,344
Coffee	88,096	Skins	14,612
Dyes	11,590	Cheese	30,217

Details of the trade in agricultural products are given for two years, values in thousands of guilders:

	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
Wheat	179,628	84,143	131,183	6,395
Flour	58,693	29,728	16,845	180
Rye	31,850	5,005	16,787	57
Barley	36,660	8,853	23,314	245
Oats	23,231	5,031	16,769	39
Potato-flour	4,711	10	35,212	32,914
Buckwheat	989	1,586	348	1
Flax	1,167	1,161	22,004	8,551
Beetroot	27	2	1,684	1,352
Bulbs, etc.	3,304	3,030	21,351	22,179
Vegetables	870	573	18,286	26,518
Fruits	6,051	10,335	6,762	16,451

Generally more than seven-eighths of the breadstuffs consumed in Holland is imported from foreign countries. Local production had only slightly increased since the war began, and the difficulty of obtaining grain was one of the most serious problems which Holland was called upon to face. The grain import figures for 1916 were not as satisfactory as those for 1915. The import of rye was much below the average. During the first eleven months of 1916 only 11,725 tons of rye were imported, as compared with 55,032 tons for the same period of 1915. Approximately the same amount of wheat was imported in 1916 as in 1915, but the imports of barley showed a marked decline. The total amount of breadstuffs imported during the first eleven months of 1916 was 757,777 tons, as against 818,426 tons in 1915.

The government made arrangements during 1916 by which the Commission of Grain Dealers at Rotterdam and the Commission for the Grain Trade at Amsterdam should receive 100 tons weekly to be placed at the disposition of dealers. The demand was so great that this arrangement could not be carried out during the first month of the year. Persons needing grain for cattle feed were required to state the amount they used during the corresponding period of 1915, the amount being used as a basis for the 1916 distributions. An average of 30 per cent of the amounts asked for was granted. The government finally attempted distribution through the various agencies for the grain trade which had formerly existed, the commissions being regulated by law. Breadstuffs for human consumption were controlled even more closely than cattle feed. The local oat crop was requisitioned for the army until sufficient quantities were imported from America. The failure of the Dutch East Indies to supply the usual supply of corn, owing to shipping conditions, necessitated increased imports of barley (fodder), linseed cake, oats, and grain from the United States. The price of American linseed cake was lower than other cattle feed. For this reason large quantities were bought in the Netherlands, and more would have been imported had shipping conditions been favorable. The government held the price of wheat in Holland quite firm. The price from January to September was fixed at $147.93 per 5291 pounds; in September, $178.85; and in November, $183.31.

The flour trade in 1916 was exclusively in the hands of the Dutch government. No importations were made until February, when the government made it known that it desired bids from American millers. About 100,000 sacks of 110 pounds each were ordered each month, only patent flour being purchased. Millers in the United States and Canada shipped the flour to the seaboard, where it was placed on steamers chartered by the Dutch government. The distribution of American flour by auction sales was discontinued late in the year, sales now being made direct to the bakers. The introduction of bread cards in February, 1917, corrected many abuses in distribution.

The table below gives countries of origin and destination in the 1914 and 1915 trade, values in millions of guilders; it must be borne in mind, however, that while over-sea trade is generally credited to the country of first origin, trade by the frontiers is credited to the immediate transmitter, so that much of the trade with France is classed as Belgian, etc.:

	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
Germany	875.7	608.0	1,043.5	714.4
D. E Ind.	395.0	379.2	143.2	0.6
U. K.	326.3	396.1	602.2	468.5
Belgium	245.9	62.0	219.5	113.9
U. S.	300.7	331.0	164.0	131.9
Russia	188.2	0.1	21.7	....
Spain	70.0	8.6	....	....
Br. E. Ind.	89.4	6.6	....	....
Hamburg	47.1	0.1	33.7	117.3
France	27.4	15.2	23.1	8.6

SHIPPING. The reports of Dutch shipping companies show increased dividends for 1916. The Royal Netherlands Steamship Company returned a net profit of 16,154,108 florins, compared with 8,934,092 for 1915, paying a dividend of 20 per cent, as against 15 per cent for the previous year. The Royal West India Mail Service paid dividend of 12 per cent, the same as for 1915. Income from operations amounted to 2,629,200 florins, as against 2,472,389 florins, service on the main line of the company being considerably reduced. The Oostzee Steamship Company earned a net profit of 2,334,034 florins, nearly double that of 1915, and paid a dividend of 60 per cent, the same as in the preceding year. The Holland-Gulf Steamship Company was able to increase its dividend from 10 per cent in 1915 to 40 per cent last year, net profits being 1,059,494 florins, as against 717,395 florins. The report of the Royal Holland Lloyd shows a net profit of 5,002,278 florins, compared with 2,919,216 for 1915, the dividend being increased from 12 per cent to 25 per cent. The year's working account of the Hollandsche Stoomboot-Maatschappij shows a gross surplus of 1,299,368 florins, as compared with 1,495,892 florins for the preceding year. The principal loss was the sinking of the company's two best ships, the *Berkelstroom* and the *Waalstroom*, which fell victims to the German submarine.

A compilation made by *Lloyd's List* from information published in the Dutch newspapers shows that on January 1, 1917, there were building in shipyards of the Netherlands ninety-one steamers of more than 1000 gross tonnage each, in addition to which there were on hand twenty-two boats of smaller size on that date. Twenty-nine of these vessels, including principally ships of about 1000 tons and none of more than 3000 tons, are listed as being constructed for foreign account. The aggregate tonnage of the 113 vessels reported then building was 324,933 tons gross. The total includes four steamers of 20,000 tons each, building at Amsterdam for the Kroninklijke West Indische Maildienst. These are the *Prins Willem III*, the *Johan de Witt*, the *Prins Willem V*, and a cargo steamer, not named. This company also has under construction at a Rotterdam yard the *Prins Maurits*, of 4300 tons gross. Vessels ordered by the Rotterdamsche Lloyd were the *Patria* of 9700 tons, the *Djambi* of 7050 tons, the *Garoet* of 7000 tons, the *Fosari* of 7060 tons. For the Stoomvaart-Maatschappij Nederland two ships, the *Billiton* of 6500 and the *Bengkalis* of 6400 tons were listed as at hand. Four other ships of more than 5000 tons, building for various owners, were also included in the report.

During 1916, seventy-one steamships and one motor schooner, with a total gross tonnage of 144,000, were launched in the Dutch shipbuilding yards, as compared with forty-four vessels, of 103,000 tons, during 1915. Of the seventy-one vessels floated in 1916, fifty-four, with a tonnage of 124,000, were built for Dutch interests: seventeen vessels, of 20,000 tons, were built for foreign account.

At the close of the year there were 117 steamships and four motor schooners, with a total tonnage of 254,500, either ordered or in the course of construction, as compared with December 31, 1915, seventy ships, of 250,000 tons.

For various reasons such as accidents, etc., thirty-three vessels disappeared from the Dutch register, by which the mercantile fleet was diminished by about 96,000 tons. About twenty-five accidents from mines and torpedoes occurred during the course of the year. The danger became so great that the Association of Captains and Engineers decided not to sail until measures to insure safety were taken by the Dutch government. The Seamen's Association Volharding also demanded that the government should take protective measures. After compromise, an agreement was reached between the associations, the steamship companies, and the minister for foreign affairs, and navigation was finally continued. Difficulties did not occur again until December, when the Association of Engineers made further demands. These difficulties were not settled during the year and were still pending during the first part of 1917, when all shipping came to a standstill as a result of the institution of unrestricted submarine warfare.

FINANCE. The rates of exchange were favorable to Dutch industry, and foreign gold continued to pour into the country. The Netherlands Bank had a satisfactory year. During 1916 money was easy, because many branches of industry had made large profits. Prices have also risen to an extraordinary degree. Nearly all commercial branches availed themselves of the easy money to enlarge their capital. The interest rate on first-class investments was lower during 1916 than formerly. The Dutch government succeeded in floating a 4 per cent and a 4½ per cent loan during the year, although formerly loans had to be issued at 5 per cent. The prices of nearly all forms of industrial stock improved. Companies interested in the manufacture of war material experienced a particularly satisfactory year. The railways were in a position to strengthen their financial condition. Several foreign state issues improved, particularly Russian bonds, large amounts of which are held in Holland. The Central Powers have financed most of their war expenditures themselves, but such bonds and loans as found their way to Holland were not favorably accepted and gradually declined in value.

The 1917 budget is given below in detail:

Revenue	*1000 gl.*	*Expenditure*	*1000 gl.*
Excise	65,477	Internal adm. ...	32,546
Direct taxes	67,495	Interior (dept.) .	45,987
Stamps, etc.	33,017	Public debt	44,144
Posts, etc.	144	War	86,008
Customs	18,159	Finance, etc.	57,291
Railways	4,549	Navy	39,841
Pilot dues	3,953	Agriculture, etc. .	23,832
Domains	1,850	Justice	13.425
Lottery	655	Colonial office ...	3,974
Bank profits	3.475	Foreign affairs ..	1,621
Mine duties	14,174	Civil list	815
Colonies	2,355	Cabinet, etc.	855
Miscellaneous ...	....	Miscellaneous ...	....
Total........	250,265	Total........	300,389

The total public debt stood, January 1, 1917, at 1,508,081,900 guilders; interest, 63,806,061.

GOVERNMENT. The executive power is vested in the sovereign; the legislative, in a parliament (States-General) of two chambers acting jointly with the sovereign. Reigning sovereign, Queen Wilhelmina, born August 31, 1880; succeeded on the death of her father, November 23, 1890, under the regency of her mother; became of age and was enthroned, August 31, 1898; married, February 7, 1901, Henry, Duke of Mecklenburg-Schwerin. Heiress-apparent, Princess Juliana, born April 30, 1909.

HISTORY. On February 22 the German submarines torpedoed seven Dutch merchant vessels in the North Sea. It appeared that the date of their departure from England and the direction of their voyage had been determined in accordance with the German naval department which had promised to let them cross. After a discussion which lasted several months the Dutch government received satisfaction, Germany promising to replace the vessels by German ships of an equal value. This was interpreted by the Allies as due to Germany's realization that the Netherlands must not be pushed too far, for Germany derived supplies from that source. On April 21 it was announced that the United States State Department had been notified by the Dutch government that the latter would strictly observe neutrality in the war between United States and Germany. The German and Dutch governments discussed the economic situation in the latter half of July. The coal and credit problems were the most important. The German representatives declared that Germany could not export to Holland more than 200,000 tons of German and 50,000 tons of Belgian coal. This quantity she could deliver until March 31, 1918. In order to render the rate of exchange stable Germany proposed, as with certain other countries, especially with Switzerland, that for the coal obtained by Holland a definite amount of florins should be placed at the disposal of Germany to be covered partly by cash payment and partly credit. The credit would be carried by a consortium of German banks. Germany insisted that the means she proposed for stabilizing credit were reasonable. Meanwhile, the negotiations had gone on so long that Germany objected to paying the prices that remained current and she made demands for a considerable increase in prices. It was reported on September 11 that England was ready to deliver regularly to Holland 180,000 tons of coal a month if Holland would place 180,000 tons of shipping space at the disposal of the Belgium Relief Commission. At the opening of the States General on September 18 the queen's speech referred to the continued necessity that Holland should hold herself ready to resist any possible infringement of her neutrality. It pointed out that it was becoming much more difficult to supply people with the necessities of life and raw material for industry. Measures for meeting the most urgent needs would shortly be introduced in Parliament. See PRICES and UNITED STATES AND THE WAR.

NEUTRALITY. See UNITED STATES AND THE WAR; WAR OF THE NATIONS.

NEVADA. POPULATION. The population of the State in 1910 was 81,975, and on July 1, 1917, it was estimated to be 110,738.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	2,000	60,000	$90,000
	1916	1,000	34,000	42,000
Wheat	1917	41,000	1,140,000	2,052,000
	1916	55,000	1,592,000	2,229.000
Oats	1917	14.000	560.000	538.000
	1916	14,000	602,000	452,000

		Acreage	*Prod. bu.*	*Value*
Potatoes	1917	15,000	3,105,000	3,727,000
	1916	14,000	2,660,000	3,458,000
Hay	1917	234,000	*a* 679,000	10,796,000
	1916	225,000	540,000	5,184,000

a Tons.

Mineral Production. The value of gold, silver, copper, lead, and zinc from the mines of the State in 1917 was over $53,000,000 according to the estimates of the United States Geological Survey. This represents an increase of over $3,000,000 over 1916. There were fair increases and record productions in copper and lead, but a slight decrease in zinc, and marked decreases in gold and silver. The gold output was valued at approximately $6,852,000, a decrease of about $2,000,000 from the output of 1916. The mined production of silver was about 11,394,000 ounces, a decrease from 13,837,525 ounces in 1916. The value of the output on account of the higher prices of silver increased from $9,105,092 to about $9,229,000. The production of copper increased from 105,116,813 pounds in 1916 to over 110,000,000 pounds in 1917, an increase of nearly 5,000,000 pounds, with an increase in value of from $25,858,736 to about $32,000,000. The production of lead increased from 25,637,278 pounds in 1916 to over 28,000,000 pounds in 1917. The value of the output increased from $1,768,972 to about $2,537,000. There was a decrease in the production of zinc from 32,443,189 pounds in 1916 to about 28,500,000 pounds in 1917. The value of this output decreased from $4,347,387 to about $2,613,000.

Transportation. The total railway mileage of the State in 1916 was 2831. Of this, 2269 miles were main track. The railroads having the longest mileage were: The Southern Pacific, 746; Western Pacific, 427; the Los Angeles and Salt Lake, 212.

Finance. The report of the State treasurer showed a balance on hand on January 1, 1916, of $302,420. The receipts for the fiscal year were $1,814,412, and the disbursements were $1,488,392, leaving a balance on December 31, 1916, of $628,440. The State bonds outstanding on December 31, 1916, amounted to $680,000.

Education. The total school population of the State in 1916 was 14,087. The total enrollment was 12,941, with an average daily attendance of 9456. There were 94 men, and 563 women teachers. The average monthly salary of men teachers was $133.41, and that of female teachers was $87.55.

Charities and Corrections. The charitable and correctional institutions of the State include the Orphans' Home, State Prison, and the Nevada Hospital for Mental Diseases. The Crittenton Home at Reno receives aid from the State, but is not under State supervision.

Politics and Government. Nevada supplied her quota to the regular army before any other State. A total of over 2000 voluntary enlistments in all branches was reported by the adjutant-general at the close of the year. In addition a full draft quota of 1051 men was supplied. Nevada was the only State in the union to furnish her draft quota for entrainment without cost to the Federal government.

Legislation. Among the more important measures passed by the legislative session of 1917 are those noted below: Laws relating to judicial procedure were amended. Penalties were imposed for the pollution or poisoning of the water supply of the State. Non-partisan ballots are required for the election of a judiciary and certain school officials. The eight-hour day was applied to women working in a large number of employments. The weekly assignment of work for women is 56 hours. Railroads are required to maintain fences on both sides of tracks and barriers at highway crossings, and failure to comply makes them liable for the market value of animals injured or killed. The award of damages for the trespass of live stock on cultivated lands is prohibited, unless such land is inclosed by a legal fence as defined by the act. Untrue, deceptive, or misleading advertisements are penalized. Merchants using trading stamps are required to pay a license of $2000. The office of State assayer to assay ores on the request of the shipper was created. The definition of railroad is extended to include automobiles carrying passengers for hire, and they are required to keep on file an indemnity bond. The banking laws of the State were amended in important detail.

State Officers. Governor, Emmet D. Boyle; Lieutenant-Governor and Adjutant-General, Maurice J. Sullivan; Secretary of State, George Brodigan; Treasurer, Ed. Malley; Comptroller, George A. Cole; Superintendent of Public Instruction, John Edward Bray; Attorney-General, Geo. B. Thatcher—all Democrats.

Judiciary. Supreme Court: Chief Justice, P. A. McCarron; Justices, Ben W. Coleman and J. A. Sanders; Clerk, William Kennett.

NEVADA, University of. A co-educational State institution located at Reno, Nev. In the fall of 1917 there were 298 students (140 men and 158 women) and a teaching staff numbering 51; it is estimated that in 1917 60 students left the university to enter government service and 6 members of the faculty were engaged in war work. There are 30,000 bound volumes and several thousand unbound pamphlets in the library. Productive funds in 1917 amounted to $337,593 and the income to $14,201. The university was founded in 1873. Walter E. Clark, professor of political science at the College of the City of New York, was elected president in 1917.

NEWARK. See Municipal Government.

NEW BRUNSWICK. One of the Maritime Provinces of Canada. It is situated east of the State of Maine and south of the province of Quebec. Capital, Fredericton. The area is stated at 27,985 square miles, of which 74 water; this is somewhat larger than the combined area of New Hampshire, Vermont, and Massachusetts. Population (1911), 351,889. The city of St. John had (1911) 42,511 inhabitants; Moncton, 11,345; Fredericton, 7208. There were no other towns in 1911 having more than 5000 inhabitants.

The provincial government is administered by a lieutenant-governor, appointed by the governor-general of Canada for five years; he acts through an executive council, or responsible ministry. The legislative power is exercised by the House of Assembly, a single chamber of 48 members elected for five years. In the House of Commons of the 13th Canadian Parliament, elected December 17, 1917, New Brunswick is represented by 11 members. On June 29, 1916, Gilbert

White Ganong was appointed lieutenant-governor, in succession to Josiah Wood. Ganong died October 31, 1917. On November 6 William Pugsley was appointed lieutenant-governor. Premier, Walter E. Foster. See Canada.

NEW CALEDONIA. A French Melanesian colony. Area, with the Loyalty Islands, etc., 18,653 square kilometres, with about 50,600 inhabitants in 1911. Of this total the Wallis Archipelago occupies 96 square kilometres, and contains 4500 inhabitants; Fortuna and Alofi, 159 square kilometres, with 15,000. Nouméa, with 6968 inhabitants, is the capital. There are 16 kilometres of railway. Imports, 1915, £465,000; 1915 exports, £640,000. Vessels entered in the 1915 trade, 91, of 102,568 tons.

NEWFOUNDLAND. An island colony of Great Britain, on the northeast side of the Gulf of St. Lawrence. Area, 42,734 square miles; population (1911), 242,619; as estimated, 1914, 247,710. St. Johns, the capital, had 32,292 inhabitants; Harbor Grace, 4279; Bonavista, 3911; Carbonear, 3540; Twillingate, 3348. Fishing, agriculture, mining, and lumbering are the chief industries. The settlements are largely on or near the coast. Paper and pulp mills have been established at Grand Falls and Bishop's Falls.

Imports (1914-15), £2,538,772; exports, £2,700,359, shipping entered and cleared, 1,962,342 tons; revenue, £811,829; expenditure, £823,995. Public debt, 1915, £6,465,683. Reported length of government railway open to traffic, in 1915, 828 miles; private railway, 47 miles; telegraph, 4524 miles.

Attached administratively to Newfoundland is that part of the peninsula of Labrador comprehended between Hudson Strait and Blane Sablon, including the Hamilton basin. Labrador has a 600-mile coast line and an area of about 120,000 square miles; population (estimated 1913), 3998.

NEW GUINEA. An East Indian island; after Australia and Greenland, the largest island in the world. The area may be estimated at about 310,000 square miles. The number of inhabitants is conjectural, but is estimated at slightly less than a million. The western part of the island (to 141° E.) is included in the Dutch East Indies; the northeastern part is Kaiser-Wilhelmsland (q.v.); the southeastern part constitutes most of the British colony of Papua (q.v.). See Dutch East Indies; German New Guinea; Papua.

NEW HAMPSHIRE. Population. The population of the State in 1910 was 430,572, and on July 1, 1917, it was estimated to be 444,429.

Agriculture. The acreage, production, and value of the principal crops as estimated by the U. S. Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	26,000	1,092,000	$2,370,000
	1916	19,000	874,000	1,005,000
Oats	1917	14,000	532,000	447,000
	1916	12,000	444,000	306,000
Potatoes	1917	21,000	2,247,000	3,752,000
	1916	15,000	1,800,000	2,988,000
Hay	1917	506,000	*a* 638,000	8,196,000
	1916	529,000	767,000	11,122,000
Tobacco	1917	100	*b* 167,000	45,000
	1916	100	165,000	28,000

a Tons. *b* Pounds.

Transportation. The total railway mileage in the State in 1917 was 1202; of this total the lines controlled or leased by the Boston and Maine comprise 1020 miles. The Maine Central has 100 miles in the State.

Finance. According to the report of the State treasurer for 1917, the receipts during the year were $3,488,321, and the expenditures were $4,017,324. There was a balance at the beginning of the year of $671,393, and at the end $142,390.

Education. According to the school census of September, 1915, there were 67,461 children in the State between the ages of 5 and 16 years. This does not include the city of Manchester which would bring the total up to 81,123. The registration in the public schools in 1916 was 62,040, and in the parochial schools 16,508. The total number of teachers employed in 1915-16 was 2493. The average monthly salary of teachers was $73.12. The total number of women teachers below high school were 2409 and the total number of men 84. The number of school houses in the State was 1631. The total expenditure for school purposes was $2,068,686.

Charities and Corrections. The State board of charities and corrections has charge of the charitable and correctional institutions of the State. These include the State Hospital for the Insane, New Hampshire State Prison, State Sanatorium, State Industrial School, School for the Feeble-Minded, New Hampshire Soldiers' Home, and county jails in each of the counties. The county prisons and jails are also under the supervision of the board.

Politics and Government. On May 29, at an election for Congressman, Sherman E. Burroughs defeated Patrick H. Sullivan. Mr. Burroughs was the Republican candidate and Mr. Sullivan the Democratic. See Liquor Regulation.

Legislation. Among the more important measures passed at the legislative session of 1917 are those noted below:

The acts relating to the conduct of trials were amended. Penalties were imposed for injury to roads, bridges, public utilities, and other public property. The manufacture, storage, and handling of explosives were regulated in detail.

Provision was made for a constitutional convention to convene in the first week of June, 1918. Laws relating to local governments were amended. Municipalities are forbidden to establish sinking funds to redeem bonds issued, and requires all bonds to be in serial form.

Provision was made for the voting of citizens of the State absent on military or naval service. Laws relating to the administration of laws affecting labor were amended in important particulars. Employers in certain factories are required to furnish safeguards and devices and do other things "reasonably necessary and practicable to lessen the dangers." The weekly hours of work for women are reduced from 55 to 54.

The governor is given authority to suspend the labor laws at the request of the Council of National Defense. Several laws were passed looking to the safety of the public on highways of the State. Measures were passed requiring signs to be erected on the crossings, and for a reduction of speed on or near the crossings. Several measures looking to the prevention of monopolies and unfair discrimination in the buying and selling of commodities, especially of food products, were enacted. The attorney-general, whenever the price of necessities of life rises, on petition of 100 voters, may institute judicial proceedings against the offender, and, if found guilty, he may be fined or imprisoned. A "Blue Sky" law was enacted. Several measures relating to eugenics were passed. Laws relating to banking were amended in important details as were the educational laws. Provision was made that children above 14 and under 16, who had not completed the required course of study, may be withdrawn from school upon recommendation of the superintendent of schools, approved by the recommendation of the superintendent of public instruction.

STATE OFFICERS. Governor, Henry W. Keyes, Rep.; Secretary of State, Edwin C. Bean, Rep.; Treasurer, John W. Plummer, Rep.; Adjutant-General, Charles W. Howard, Rep.; Attorney-General, J. P. Tuttle, Rep.

JUDICIARY. Supreme Court: Chief Justice, Frank N. Parsons; Associate Justices, Reuben E. Walker, John E. Young, Robert J. Peaslee, William A. Plummer; Clerk, Arthur C. Chase.

NEW HAMPSHIRE COLLEGE. A co-educational State institution located at Durham, N. H. In the fall of 1917 there were 552 students. Volumes in the library numbered 35,000. Productive funds in 1917 amounted to $900,000 and the income to $37,500. The college was founded in 1866. Ralph D. Hetzel was elected president in 1917.

NEW HEBRIDES. A group of Melanesian islands jointly administered by France and Great Britain through the French and English high commissioners: M. King, British; L. Miramende, French. Estimated area, 5100 square miles; estimated population, 70,000. There are Presbyterian and Roman Catholic missions. Vila, in the island of Efate, is the seat of government. A large proportion of the natives are cannibals, and the sale to them of arms, ammunition, and intoxicating liquors is prohibited. For 1914-15, the estimated revenue and expenditure were £21,218 and £10,400. Deficits are met by the British and French governments jointly. In addition, for 1914-15, there was an estimated British expenditure of £8156.

NEW JERSEY. POPULATION. The population of the State in 1910 was 2,537,167, and on July 1, 1917, it was estimated to be 3,014,194.

AGRICULTURE. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	297,000	12,771,000	$21,711,000
	1916	270,000	10,800,000	10,800,000
Wheat	1917	89,000	1,691,000	3,602,000
	1916	90,000	1,800,000	2,952,000
Oats	1917	73,000	2,482,000	1,737,000
	1916	69,000	2,070,000	1,263,000
Potatoes	1917	98,000	11,172,000	15,753,000
	1916	85,000	10,370,000	16,074,000
Hay	1917	350,000	*a* 508,000	10,160,000
	1916	375,000	600,000	10,560,000

a Tons.

MINERAL PRODUCTION. The production of iron ore in the State in 1916 was 493,004 gross tons, compared with 415,234 tons in 1915. The total shipments from the mines of the State in 1916 were 528,084 tons, valued at $1,877,056 compared with 391,115 tons, valued at $1,140,400 in 1915.

The zinc production of New Jersey is confined to the output of the Mine Hill and Starling mines at Franklin Furnace, Sussex County. There were 712,464 tons of crude ore produced at these mines in 1916, which yielded a total of 221,396,000 pounds of zinc, calculated as zinc oxide and spelter, compared with 233,236,000 pounds in 1915.

TRANSPORTATION. The total railway mileage for 1917 was 5980. The lines having the longest mileage were: Pennsylvania, 1864; Central Railroad of New Jersey, 1149; Delaware, Lackawanna, and Western, 696; Lehigh Valley, 514. There was very little construction in 1917 and this was chiefly in side-track, yards, etc. The legislature in 1917 passed several important laws in relation to railways. One of these empowered the Board of Public Utilities Commissioners to require any common carrier by railroad to employ a sufficient number of men in the management of any of its trains. This act repealed a previous act intended to promote the safety of travelers and employees upon railroads. An act forbade the construction of track crossings without the approval of the Public Utilities Commission.

FINANCE. The report of the State treasurer for the period ending October 31, 1916, showed a balance on hand on October 31, 1915, of $2,457,687. The receipts for the year were $12,917,658; the disbursements, $11,297,103, leaving a balance on hand on October 31, 1916, of $4,078,242.

EDUCATION. The total enrollment in the public schools in 1917 was 579,243 with the average daily attendance of 427,874. The number of male teachers was 14,803 and the number of female teachers 2493. The average monthly salary of day school teachers was $104.15. The total expenditure for current expenses was $19,677,588.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State, under the control of the State Department of Charities and Corrections, include the State Hospital at Morris Plains, New Jersey State Village for Epileptics at Skillman, State Home for Feeble-Minded at Vineland, Sanatorium for Tuberculosis at Glen Gardner, New Jersey State Prison at Trenton, New Jersey Reformatory at Clinton, New Jersey State Reformatory at Rahway, New Jersey State Home for Boys at Jamesburg, New Jersey State Home for Girls at Trenton, New Jersey State Home for Disabled Soldiers at Kearny, New Jersey Home for Disabled Soldiers and Sailors and Their Wives or Widows at Vineland.

LEGISLATION. Among the more important measures passed at the legislative session of 1917 are those noted below:

The laws relating to judicial procedure were amended in important particulars, especially those relating to bar examinations. Provision was made that any person who brings into the State property which he stole or received, knowing it to have been stolen, in another State, shall be punished in the same way as if the theft had been committed within the State. Strict measures were passed relating to the marriage of people having infectious diseases. Provision was made for the purchase and sale of food by designated officials. The governor was authorized "to organize and employ any and all resources within the State" and "to exercise any and all power necessary in his judgment to render such assistance." The use of prisoners to replace free labor on strike or in any case, if free labor is obtainable, is forbidden. Revisions or reductions in the civil service are subject to investigation and approval by the civil service commissioner. A measure was enacted providing for the organization and future administration of all municipal sinking funds. Municipalities are required to adopt a budget system. An attempt was made to improve the administration of laws dealing with labor by the division of labor inspectors into four grades. In the lower of these grades appointment is to be made from the civil service lists; promotion to higher grades is to be made from higher examinations after a service of five years in the lower grades. Laws relating to safety and sanitation in labor conditions were amended. The full-crew law passed several years ago was repealed, but provides that no reduction in any train crew as constituted prior to such repeal shall be made without the authorization. of the public utilities commission, and the commission is given power to request any railroad to employ on its trains such number of employees as it deems necessary to offer safe, adequate, and proper service. A commission was reappointed for the survey of municipal finances and to study taxation, revenue, and expenditures. Laws relating to health were amended in important details. See Penology.

On October 9 the voters of Newark, the largest city in the State, adopted the commission form of government.

State Officers. Governor, Walter E. Edge, Rep.; Secretary of State, Thomas F. Martin, Dem.; Treasurer, William T. Read, Rep.; Comptroller, Newton A. K. Bugbee, Rep.; Attorney-General, John W. Wescott, Dem.; Commissioner of Education, Calvin N. Kendall, Dem.; Commissioner of Insurance, G. M. La Monte, Dem.

Judiciary. Court of Errors and Appeals, composed of the Chancellor, presiding, the Chief Justice of the Supreme Court, the Associate Justices, and six lay Judges as follows: Chancellor, Edwin Robert Walker; Chief Justice, William S. Gummere; Justices, Charles G. Garrison, Francis J. Swayze, Thomas W. Trenchard, Charles W. Parker, James J. Bergen, James F. Minturn, Samuel Kalisch, Charles C. Black; Lay Judges, John Josiah White, Henry S. Terhune, Ernest J. Heppenheimer, Robert Williams, Frank M. Taylor, and Walter P. Gardner.

NEWLANDS, Francis Griffith. An American legislator, born near Natchez, Miss., August 28, 1848, died suddenly on December 24, 1917. He entered Yale as a member of the class of 1867, but left in the middle of his junior year and took up the study of law at Columbian (now George Washington) University, and before his graduation was admitted to the bar of the Supreme Court of the District of Columbia. He went to San Francisco in 1870 and became there a distinguished member of the bar. In 1888 Mr. Newlands became a resident of the State of Nevada, from which he was shortly afterwards elected to the Fifty-Third Congress. He was reëlected to the Fifty-Fourth and Fifty-Seventh Congresses. While a member of the House he served on the Committees of Foreign Affairs, Banking and Currency, and Ways and Means. In 1903 he succeeded United States Senator John P. Jones, Republican, and was reelected in 1908 and again in 1914. While in the House Mr. Newlands was the author of the Reclamation Act (1902), a bill which provided that moneys collected from the sale of public lands should be devoted to irrigation projects. In the Senate he was one of the leaders of the Republican party and took an active participation in important legislation concerning railroad rate laws, internal improvement measures, regulation of industrial combinations, and tariffs. The Newlands Act of 1913 provided for mediation and arbitration in railroad wage disputes. He played a prominent part in the framing of the Interstate Trade Commission Act in 1914. When the United States entered the war Senator Newlands was the chairman of the Joint Congressional Committee on Transportation Problems, as well as of the Interstate Commerce Committee. He was closely identified with the railroad situation during the war, and consulted with President Wilson concerning the solution of the problem. He was regarded as the administration spokesman on railroad legislation work. He piloted the Adamson Eight-Hour-Day Bill through the Senate during the last Congress. Because of his deep interest in these questions he was regarded as the preëminent expert on them in the Senate and probably in Congress.

NEW MEXICO. Population. The population of the State in 1910 was 327,301, and on July 1, 1917, it was estimated to be 423,649.

Agriculture. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	170,000	3,400,000	$6,362,000
	1916	125,000	2,625,000	2,966,000
Wheat	1917	203,000	2,582,000	5,551,000
	1916	113,000	2,104,000	3,156,000
Oats	1917	45,000	1,350,000	1,134,000
	1916	64,000	1,856,000	1,244,000
Potatoes	1917	11,000	1,276,000	2,105,000
	1916	8,000	816,000	1,428,000
Hay	1917	202,000	*a* 384,000	8,064,000
	1916	185,000	370,000	5,180,000

a Tons.

Mineral Production. The output of the State in 1916, according to the United States Geological Survey, was valued at $30,827,767. The gold production was valued at $1,382,480. There were 1,766,274 ounces of silver, 92,747,289 pounds of copper, 8,214,189 pounds of lead, and 36,570,649 pounds of zinc. These figures indicate decreases of $78,625 in gold, and 238,257 ounces of silver, but increases of 15,958,923 pounds of copper, 3,671,828 pounds of lead and 11,166,585 pounds of zinc. The value of the metals was higher than in 1915. The total was $30,827,767 compared with $19,279,468 in 1915.

The output of metal in the State in 1917 is estimated by the United States Geological Survey as follows: gold $1,010,000, silver 1,268,000 ounces, lead 8,340,000 pounds, copper 104,500,000 pounds, zinc 27,900,000 pounds. These figures show decreases of $372,480 in gold and 498,274 ounces of silver, but increases of $130,056 in the value of the silver, 11,800,000 pounds in quantity and $5,600,000 in the value of the copper, and 126,000 pounds in quantity and $200,000 in value of lead.

The coal production of the State in 1916 was 3,793,011 tons net loss valued at $5,580,369, a decrease of less than 1 per cent in quantity but an increase of nearly 2 per cent in value. The decrease was in the shipments from the two largest fields, the Raton field in Colfax County and the Gallup field in McKinley County; both decreases were caused largely through the decrease in demand for railroad fuel.

Except in November the supply of cars was ample, but there was a shortage of available labor. The market for coal from New Mexico was extended on the Pacific Coast, and to interior points that normally depend on waterborne coal.

TRANSPORTATION. The total railway mileage of the State is about 3000. The lines having the longest mileage are: Atchison, Topeka, and Santa Fé, 1194; El Paso and Southwestern, 625; Denver and Rio Grande, 217.

EDUCATION. The school population of the State in 1917 was 110,969. There were enrolled in the public school 77,062 with the average daily attendance of 51,374. The number of female teachers was 1296. The number of male teachers was 648. The average monthly salary of teachers was $54.60. The total expenditure for school purposes was $2,004,662.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the Insane Asylum at Las Vegas, the State Penitentiary at Santa Fé, the Reform School at Springer, the Miners' Hospital at Raton, and the Deaf and Dumb Asylum at Santa Fé.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below.

Amendments were made for the regulation of law examinations for candidates for the bar, and other statutes relating to the administration of the law. The workingmen's compensation law was enacted. Provisions were made for the part payment of transportation expenses of normal school students from distant parts of the State.

STATE OFFICERS. Governor, W. E. Lindsey, Dem.; Lieutenant-Governor, Vacant; Secretary of State, Antonio Lucero, Dem.; Treasurer, H. L. Hall, Dem.; Auditor, W. G. Sargent, Rep.; Adjutant-General, James Baca, Dem.; Attorney-General, Harry L. Patton, Dem.; Superintendent of Public Insurance, John H. Wagner, Rep.; Commissioner of Insurance, Cleofes Romero.

JUDICIARY. Supreme Court: Chief Justice, R. H. Hanna; Associate Justices, Clarence J. Roberts and Frank W. Parker; Clerk, José D. Sena.

NEW SOUTH WALES. A State of the Commonwealth of Australia. It lies in the southeastern part of the continent, being bounded on the north by Queensland, on the east by the Pacific, on the south by Victoria, and on the west by South Australia. The capital is Sydney, which, including environs, is the second largest city of the southern hemisphere (Buenos Aires being first). The estimated area of the State is 309,460 square miles, which is slightly more than one-tenth the area of the Commonwealth and about equivalent to the combined area of Nevada, Utah, and Arizona. Estimated population, June 30, 1916, 1,856,093, as compared with 1,868,656 in 1915 and 1,646,734 at the 1911 census (these figures being exclusive of full-blooded aboriginals). The population of Sydney in 1911 was 112,921 or, including suburbs, 629,503; as estimated at end of 1915, 763,300. At the end of 1915, Newcastle and suburbs had an estimated population of 58,750; Broken Hill, 28,350; Parramatta, 12,600; Maitland, 11,850; Granville, 10,900; Auburn, 10,700; Goulburn, 10,100.

The operation of the New South Wales railways during the fiscal year ending June 30, 1917, showed a deficit of £394,064. This was due to the fact that the low grade traffic carried in undue proportion does not pay expenses. Compared with 1912, the freight traffic on the New South Wales railway increased 32 per cent, but the traffic earnings under 1d. per ton mile increased by 226,924,606 ton-miles and the paying traffic earning over 1d. per ton-mile only advanced by 47,544,336 ton-miles. The comparative figures for the year 1912-17 are shown herewith:

	Year ended June, 1912	*Year ended June, 1917*
Capital expended:		
Lines open	£58,514,903	72,006,621
Goods carried:		
Tons one mile.......	862,016,104	1,136,485,046
Passengers carried:		
No. one mile........	1,091,087,609	1,478,707,236
Gross earnings	£6,491,473	8,380,085
Working expenses and interest on capital.	£6,075,960	8,774,149
Result	£415,513 (Surplus)	394,064 (Deficit)

A general increase in railway and tramway rates went into effect on the railways of New South Wales on August 8. The increases were: Passenger fares, 10 per cent; hay, straw, and chaff, 10 per cent; coal in railway-owned trucks, 10 per cent; coal in privately-owned trucks, 15 per cent; parcels, 10 per cent; tramway fares on penny sections, 50 per cent; but no change in the fares for two or more sections. Workmen's fares on street railways were also increased. The estimated additional revenue was £460,000 per annum from the railways and £80,000 from the street railways.

The legislative power is exercised by a parliament of two houses, the Legislative Council and the Legislative Assembly. Members of the Council (52 in 1916) are appointed by the crown for life; members of the assembly (90) are elected by universal suffrage for the duration of parliament, which is not more than three years. The executive authority rests with a governor, who is appointed by the crown and acts through a responsible ministry. The governor in 1917 was Sir Gerald Strickland, Count della Catena, G.C.M.G., who assumed office in March, 1913. Premier and treasurer, William Arthur Holman. See AUSTRALIA.

NEW YORK. POPULATION. The population of the State in 1910 was 9,113,614, and on July 1, 1917, it was estimated to be 10,460,182.

AGRICULTURE. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	840,000	26,040,000	$51,559,000
	1916	700,000	21,000,000	23,100,000
Wheat ...	1917	430,000	8,385,000	17,608,000
	1916	400,000	8,400,000	14,112,000
Oats	1917	1,275,000	44,625,000	33,469,000
	1916	1,206,000	31,356,000	19,441,000

		Acreage	*Prod. Bu.*	*Value*
Potatoes .	1917	400,000	38,000,000	49,400,000
	1916	320,000	22,400,000	35,392,000
Hay	1917	4,185,000	*a* 6,110,000	92,261,000
	1916	4,350,000	*a* 7,047,000	83,859,000
Tobacco ..	1917	2,500	*b* 3,125,000	688,000
	1916	3,700	*b* 4,551,000	592,000

a Tons. *b* Pounds.

TRANSPORTATION. The total railway mileage within the State on December 31, 1916, was 8443. The lines having the longest mileage were: The New York Central, 2820; the Erie Railroad, 950; New York, Ontario, and Western, 477; Delaware and Hudson, 724; Lehigh Valley, 659; Delaware, Lackawanna, and Western, 493; Pennsylvania, 461; Long Island Railroad, 397.

FINANCE. According to the report of the State treasurer the total receipts at the end of June, 1917, were $105,850,928. The expenditures amounted to $95,777,249. There was on hand on July 1, 1916, a balance of $41,924,672, and on June 30, 1917, a balance of $51,998,351. The bonded debt of the State on June 30, 1917, was $236,309,351. The chief sources of revenue are direct taxes, indirect taxes, corporation, inheritance, and other taxes. The chief expenditures are for the support of State institutions, for education, and for the maintenance of canals and highways.

EDUCATION. The latest statistics for education in the State are for 1915-16. In this year the school population in the State amounted to 2,273,779. The total enrollment in public schools was 1,625,777 with the average daily attendance of 1,318,605. There were 47,685 female and 5906 male teachers. The average yearly salary of teachers is $967.27. The expenditure for school purposes during the year was $70,179,935.

By an act of the 1917 legislature the township school system was adopted. By this enactment over 10,000 school districts are now under the supervision of 982 town Boards of Education. In addition, there are 195 separate districts which do not come under the township system. These are villages having a population of 1500 or employing fifteen teachers or more; villages of 5000 or more employing a superintendent of schools and cities do not come under the township system.

CHARITIES AND CORRECTIONS. For information on charities and corrections in New York, see articles on CHARITIES, PENOLOGY, ETC.

POLITICS AND GOVERNMENT. Aside from events relating to the war, there were few incidents of interest in the State during the year. From a political point of view the most significant happening was the carrying of the woman suffrage amendment in the election of November. See WOMAN SUFFRAGE.

On April 4 the legislature completed the passage of a bill creating a State constabulary similar to the State constabulary of Pennsylvania. This body was organized during the year and had begun to do effective service in the rural communities.

On September 7, Dudley Field Malone resigned as Collector of the Port of New York, avowedly in protest at the treatment given the suffrage pickets before the White House in Washington. The president appointed Byron G. Newton to succeed him.

The most important election in 1917 was for mayor and the other officials of New York City. Mayor Mitchel at first declined to become a candidate, but was finally induced to run for another term. An attempt to unite the Republican and Independent voters to a common action in nominating Mr. Mitchel failed, and at the primary election he failed to receive a sufficient number of Republican votes to become their nominee. Their votes were cast for William Bennett, former Congressman. The Democrats nominated Judge John F. Hylan, of Brooklyn. The Socialists nominated Morris Hillquit. On October 1, Mayor Mitchel accepted from a mass meeting the independent nomination for mayor. The campaign was spirited and bitter. The Mitchel supporters assailed the record of Judge Hylan and asserted that he had been identified with certain pro-German and pacifist movements. Judge Hylan denied these charges and replied by accusing Mr. Mitchel and the other officers of the city of being tools of the corporations and of an attempt to wreck the school system for political purposes.

Men of national prominence took part in the campaign chiefly as advocates of Mr. Mitchel's reëlection. These included Charles E. Hughes, Theodore Roosevelt, and Henry Morganthau, and others. The newspapers also, almost without exception, supported him strongly. In spite of this, and in spite of the excellent record which he had made during his term of office, he was defeated by Judge Hylan by an enormous plurality. The figures are as follows: Hylan, 313,871; Mitchell, 155,488; Hillquit, 145,456; Bennett, 56,385. It is to be noted that the Socialist vote was nearly as large as that cast by the Fusionists for Mitchel, and greatly surpassed the vote for the Republican candidate, Bennett. The Democrats elected in addition to the mayor, all the other city officials.

On October 12 the new Catskill Aqueduct was opened in New York City with appropriate ceremonies. See AQUEDUCTS.

The political and economic life of New York was greatly effected during the year by the state of war. The declaration of war was greeted with great enthusiasm throughout the State. New York City was the scene of many imposing parades and ceremonies (see UNITED STATES AND THE WAR). A general census of all persons in the State under the age of 45 was taken in June, for the purpose of determining the economic possibilities of the population. Two military cantonments were established: one for the National Guard troops at Camp Mills, Mineola, and one for the National Army at Camp Upton, Yaphank. At the former were gathered troops of many States including the 69th regiment of New York. From the diversity of the composition, it was called the Rainbow Division. After several months of training these troops were transported to France. At Camp Upton were gathered the selected men of the National Army from New York City. The training there continued throughout the year. A camp for the former regiments of the New York National Guard was formed at Spartanburg, S. C. There also training was in progress at the end of the year. On April 29, prior to their departure for training camps, the 27th division of the New York National Guard marched in review down Fifth Avenue. On September 4, the first of the State's quota for the new National Army paraded on Fifth Avenue. The 7th Regiment left for Camp Wadsworth, Spartanburg, S. C., on September 11. It was followed on the 14th by the former 12th Regiment.

On November 12, the president made an address at Buffalo before the National Convention of the American Federation of Labor. In this he insisted that free industry could not continue if the Pan-German plan of World Dominion was achieved. For an account of the activities in the State relating to war relief, Liberty Loans, food control, fuel control, see the articles devoted to these subjects.

LEGISLATION. A special session of the legislature was called by Governor Whitman to pass a law creating a commission to control, during the war, the production, distribution, and transportation of foods, and to prevent the forcing up of foods by hoarding. George W. Perkins was appointed chairman of this commission by the governor, but the Senate refused to confirm the appointment and after a delay of two months Governor Whitman withdrew his name and appointed John Mitchell, at that time state industrial commissioner, to the post. The two other members of the commission appointed were Jacob Shurman, president of Cornell University, and Charles H. Weiting, former state agricultural commissioner.

During the session of the legislature, many important measures were passed. A State Food Supply Commission was created for the purpose of encouraging the production of food. The work of this commission was later taken over by the food control commission. There was also created a State Council of Farms and Markets which is to be permanent. Compulsory military training for boys between the ages of 16 and 17 was provided for. Several important measures affecting public health were enacted. Provision was made for the education of children with retarded mental development. The public health law which regulates the sale and distribution of habit-forming drugs was amended. It was provided that children of 12 years of age or over might be released from school attendance between April 1 and November 1 for employment in the production and care of food products. The minimum school period was increased from 160 to 180 days in other than public schools. Provision was made for the compensation of State and municipal officers and employees while absent on military service. The creation of a State constabulary force was authorized. A local option law was passed, which is noted in the article on LIQUOR REGULATION. See STRIKES.

STATE OFFICERS. Governor, Charles Seymour Whitman; Lieutenant-Governor, Edward A. Schoeneck; Secretary to Governor, William A. Orr; Secretary of State, Francis M. Hugo; Comptroller, Eugene M. Travis; State Treasurer, James L. Wells; Attorney-General, Merton E. Lewis; State Engineer and Surveyor, Frank M. Williams; Superintendent of Insurance, Jesse S. Phillips; Superintendent of Banking Dept., George I. Skinner; Superintendent of State Prisons, James M. Carter; Superintendent of Public Works, W. W. Wotherspoon; Commissioner of Education, John H. Finley.

NEW YORK, COLLEGE OF THE CITY OF. A municipal institution for the education of men in New York City. In the fall of 1917 there were 2097 students in the Day Session, 3868 in the Evening Session and the Division of Vocational Subjects, 4230 in Extension Courses, and 1280 in Townsend Harris Hall. There were 234 members of the faculty. During the year 1917 Professor C. H. Parmly of the department of engineering died. D. H. Steinman was appointed associate professor of engineering and Professor C. L. Brownson was chosen head of the department of classical languages and literature. Professor Walter E. Clark, of the faculty of political science, resigned to become president of the University of Nevada. In 1917 courses in civil, electrical, mechanical, and chemical engineering were instituted. There were 66,000 volumes in the library. The college cooperated with the U. S. Signal Corps Reserve and trained and furnished quarters for a company. The college was founded in 1847. It is supported by New York City. President, Sidney E. Mezes, LL.D.

NEW YORK BARGE CANAL. See CANALS.

NEW YORK CITY. See WATER-WORKS.

NEW YORK UNIVERSITY. A non-sectarian educational institution in New York City. Women are admitted to some of its departments. In the fall of 1917 there were 6908 students and 508 members of the faculty. Volumes in the library numbered 134,488. Productive funds amounted in 1917 to $1,394,657 and income therefrom to $60,522. Jacob H. Schiff made a gift of $50,000 in 1917 to endow a division of public affairs. Beginning in 1917 the school of commerce recommends such of its students as are graduates of approved colleges and have completed the required work of the school, for the degree of Master of Business Administration. The university organized a War Council of Deans, Acting Deans and Administrative Officers to consider plans for effective coöperation with various activities concerned with the prosecution of the war. It was estimated at the end of the year that from the School of Applied Science alone, 62 teachers were in war work and about 75 students had left to join the colors. New York University was founded in 1831. Chancellor, Elmer Ellsworth Brown, LL.D.

NEW ZEALAND, DOMINION OF. Three principal and several smaller islands in the South Pacific; an autonomous British dependency. Capital, Wellington.

AREA AND POPULATION. Area of North Island, 44,468 square miles (563,729 inhabitants, census of April 2, 1911); South Island, 58,525 square miles (444,120); Stewart Island, 665 (357); total, New Zealand proper, 103,658 square miles; total population (including 262 on Chatham and Kermadec islands), 1,008,468. Annexed islands, 1903 square miles (12,340 inhabitants); making a total of 104,751 square miles and 1,021,066 inhabitants, exclusive of 49,844 Maoris. Total population with Maoris, 1,070,910. Wellington had 64,372 inhabitants (with suburbs, 70,729); Auckland, 82,482 (102,676); Christchurch, 53,116 (80,193), Dunedin, 41,529 (64,237); Invercargill, 12,782 (15,858).

Total population October 15, 1916, 1,099,295 exclusive of aborigines (552,085 males, 547,210 females). Marriages, 1915, 10,028; births, 27,850 (1152 illegitimate); deaths, 9965; immigrants, 25,551; emigrants, 22,476.

PRODUCTION. The area of land under occupation in 1916 was 29,404,291 acres. Area under crops, 16,841,575 acres.

In the table below will be found the acreage under main cereals with the yield for two years:

	Hectares		Quintals	
	1917-18	1916-17	1917-18	1916-17
Wheat	118,976	88,625	1,370,870	1,743,245
Oats	196,270	72,194	.....	967,715
Corn	2,604	3,272	71,991	86,458
Potatoes	10,320	12,063	1,329,061	1,308,740

Live-stock, January 31, 1917, as compared with 1916, is detailed below:

	1917	1916	Difference
Horses	367,167	371,331	— 4,164
Cattle	2,502,700	2,417,491	+ 85,209
Sheep	24,753,324	24,788,150	— 34,826
Pigs	278,186	297,501	— 19,315

Of the cattle, 760,108 in 1917 and 750,323 in 1916 were milch cows.

COMMERCE, ETC. The export of wheat, barley, oats, flour, meal, linseed, and cotton is prohibited to any other destination than the United Kingdom and British possessions and protectorates, except with the consent of the minister of customs. The export of foodstuffs and fodder is also prohibited to foreign ports in Europe of the Mediterranean and Black Seas, other than those of France, Italy, Russia (except Baltic ports), Belgium, Spain, and Portugal.

Prohibition of export is also in force as regards all goods which for the time being are contraband of war (either absolute or conditional) under any proclamation or order in council of the British Government. By order in council dated February 8, 1917, the export of wheat, oats, and other cereals, with their products, is entirely prohibited, except with the consent of the minister of customs.

In the table below is shown the trade with the United Kingdom, the colonies, other countries, and totals for three years:

Imports	1912	1914	1915
U. K.	£12,499,787	£11,985,946	£10,623,426
Australia	2,583,887	3,376,371	2,786,174
United States	2,049,618	2,282,966	2,862,537
Other	......	......	......
Total	£20,976,574	£21,856,096	£21,728,854
Exports	**1912**	**1914**	**1915**
U. K.	£16,861,256	£21,383,891	£25,389,030
Australia	2,848,664	1,928,410	2,548,605
United States	620,988	1,028,054	2,006,507
Other	......	......	......
Total	£20,330,908	£26,261,447	£31,748,921

Some details of the 1915 trade follow, with values in thousands of pounds sterling:

Imports	£1,000	Exports	£1,000
Clothing, etc.	3,672	Wool	10,388
Iron and steel	3,128	Gold	1,695
Sugar	1,069	Agricultural prods.	665
Tea	455	Frozen meat	7,794
Spirits, etc.	543	Kauri gum	279
Tobacco, etc.	534	Tallow	781
Coal	345	Hides, skins	1,449
Bags and sacks	254	Butter and cheese	5,431
Fruit	411	Preserved meats	224
Oils	794	Phormium (fibre)	572
Paper, etc.	819	Coal	330
Manures	477	Timber	384
Specie	1,070	Specie	318
Other	....	Other	....
Total	21,729	Total	31,749

In his report for the fiscal year ending March 31, 1917, the minister for railways of New Zealand reported that there were 2970 miles of main lines in operation. The total earnings for these amounted to $23,363,142, an increase of $1,228,567 over the previous year. The expenditures amounted to $14,243,584, leaving a net profit of $9,119,558, or a return of 5.3 per cent on a capital investment of $190,000,000. In 1915-16 the tonnage of goods carried was 6,370,946, and the passengers numbered 14,201,506.

In the fiscal year under review there were 14,173,115 passengers carried, as compared with 14,201,506 for the previous year, and 5,826,265 tons of freight were handled, as compared with 5,960,562 tons in 1916, and 412,908 tons of live stock as compared with 410,383 tons in 1916. The increased receipts for the year ended March 31, 1917, were due to the increased passenger and freight rates charged, as the aggregate business in 1916-17 was less than for 1915-16. During the year 1917 a new locomotive constructed at the government workshop at Dunedin was tested on the heavy-graded section between Oamaru and Dunedin, and also on the North Island on the Wellington-Taihape section.

FINANCE, ETC. In the table below are shown financial statistics for comparative years:

	1911-12	1914-15	1915-16
Revenue	£11,032,544	£12,451,945	£14,186,095
Expenditure	10,340,368	12,379,803	12,493,107

Gross public debt March 31, 1916, £109,637,397; accrued sinking fund, £3,679,964; net debt, £105,957,433.

A governor administers the Dominion (the Earl of Liverpool in 1917). Prime minister, W. F. Massey.

NIAGARA FALLS. See WATER-WORKS.

NICARAGUA. The largest of the Central American republics. The capital is Managua.

AREA, POPULATION, ETC. Nicaragua is divided into 13 departments, 3 districts, and 2 comarcas; the total estimated area is 49,552 square miles, which is a little larger than the gross area of the State of New York. The population, which is principally mestizo or Indian, was estimated at 703,540 at the end of 1914. Estimated population of chief towns: León, 63,000; Managua, 48,367 (according to a 1917 enumeration); Granada, 25,000; Matagalpa, 16,000; Bluefields, the chief eastern seaport, 15,000. In 1915, there were 414 state primary schools, with about 35,000 pupils enrolled. Illiteracy is general.

PRODUCTION AND COMMERCE. The principal crops are bananas (in the Bluefields region), coffee (in the western districts), corn, sugar cane, and beans, while also of some importance are coconuts, rice, tobacco, cacao, and various fruits. Cattle raising, especially in the northwest, is a profitable industry. Mining is almost limited to gold.

Imports and exports in 1916 were valued at $4,777,597 and $5,284,863 respectively. Valued in thousands of dollars, imports and exports have been as follows:

	1907	1912	1913	1914	1915	1916
Imports	2,811	4,967	5,770	4,134	3,159	4,778
Exports	3,360	3,862	7,712	4,955	4,567	5,285

Leading imports in 1915 and 1916 respectively, in thousands of dollars: cotton goods, 592 and 1157; iron and steel manufactures, 381 and 608; chemicals, drugs, and medicines, 182 and 431; wheat flour, 378 and 295; hides and skins and manufactures thereof, 145 and 233. Principal exports have been as follows:

	Metric Quintals		*$1,000*	
	1915	*1916*	*1915*	*1916*
Coffee	91,325	104,528	1,983	2,171
Gold	.....	.....	935	959
Bananas ...	* 1,105,648	* 1,110,505	372	494
Hides	11,316	11,826	536	500
Woods	.....	.....	272	374
Rubber	2,233	2,959	173	256
Sugar	2,121	30,345	16	248
Cacao	1,034	1,257	38	58
Coconuts ...	† 965,436	† 1,168,356	12	31

* Bunches. † Number.

Imports from principal countries, in thousands of dollars:

	1912	*1913*	*1914*	*1915*	*1916*
United States	2,549	3,244	2,566	2,593	3,856
United Kingdom ..	939	1,151	718	302	611
France	256	401	254	138	202
Italy	122	144	115	44	84
Germany	604	619	391	37	...

Exports to these countries, in thousands of dollars:

	1912	*1913*	*1914*	*1915*	*1916*
United States	1,767	2,722	2,428	3,080	3,731
France	626	1,763	1,156	601	926
Italy	48	98	208	274	254
United Kingdom ..	515	999	367	439	38
Germany	702	1,888	561	...	...

COMMUNICATIONS. A railway extends from Corinto, on the Pacific, to Chinandega, León, Managua, Masaya, Granada, and Diriamba; its total length, with short branches, is 171 miles. On the Atlantic coast near the Río Grande are 20 miles of private railway and the Pearl Lagoon Railway, of which in 1917 15 miles were in operation and 40 miles of roadbed completed.

Telegraphs: wire, 3637 miles; offices, 148. Post offices, 151.

FINANCE. The legal standard of value is gold. Monetary unit, the córdoba, at par is equivalent to the American dollar; exchange rate, October 1, 1917, $1.00 = 1.01 córdobas. Estimated revenue for 1917, $2,160,000 (customs, $1,000,000; liquors and tobacco, $900,000); estimated expenditure, $2,094,944 (treasury and public credit, $691,614; war and marine, $327,450; police, $310,237; public instruction, $192,762). Foreign debt December 31, 1916, £1,179,620; internal debt in 1917, about 11,000,000 córdobas.

GOVERNMENT. The legislative power is exercised by a congress of two houses, the Senate and the Chamber of Deputies. Senators (13 in number) are elected for six years and deputies (40) for four years, all by direct vote. The president is elected by direct vote for four years and is ineligible for the next term. For the term ending December 31, 1916, the president was Adolfo Díaz. On October 1, 1916, Emiliano Chamorro was elected president; he was inaugurated January 1, 1917. First designate, Senator Salvador Chamorro; second designate, Deputy Vicente Rappaccioli.

NICKEL MINERALS. See GEOLOGY, *Economic Geology.*

NIEMANN, ALBERT. A German dramatic tenor, died in Berlin, February 5, 1917. He was born in 1831 at Erxleben, near Magdeburg, and began his career as an actor, taking minor rôles at Dessau in 1849. He also sang in the chorus at this time, and his voice was discovered by Friedrich Schneider, who, with a baritone named Nusch, gave him his early training. At Hanover, where he sang from 1854 to 1856, he gained royal favor and was sent to Paris to study under Duprez. After appearing in various other German cities, among them Halle, he returned to Hanover in 1860 and remained there six years. During this period he was chosen by Richard Wagner to create the chief rôle of *Tannhäuser* at its first performance in Paris in 1861. This was a memorable occasion, for the opera was riotously received by the Parisian public and after three performances the company was glad to escape under police protection. From 1866 till his retirement in 1889 he was a member of the Royal Opera in Berlin, where he gained fame as an interpreter of Wagner. The composer chose him to create the rôle of Siegmund in *Die Walkuere* at Bayreuth in 1876, and the seasons of 1886-88 he spent in New York as a member of the Metropolitan Opera Company, appearing with Lilli Lehmann and other noted singers. Particularly as Tristan, and as Siegfried in *Die Götterdämmerung*, he left a record of magnificent acting and vocal power. His handsome presence made him an ideal embodiment of the Wagner heroes. He essayed operas of another type, such as *Faust*, *Robert le Diable*, and *Rienzi*, but they did not fit him, and for Italian opera he had no aptitude at all. But in his own field, he will remain among the great figures. He was appointed *kammersänger* to the German emperor. Niemann was twice married to famous actresses, Marie Seebach, from whom he was later divorced, and Hedwig Raabe.

NIGER, MILITARY TERRITORY OF THE. See MILITARY TERRITORY OF THE NIGER.

NIGERIA, COLONY AND PROTECTORATE OF. A British possession in West Africa, composed of the old protectorate of Northern Nigeria and the old protectorate and colony of Southern Nigeria. The country is separated into three principal districts—the colony proper (area, 1400 square miles), the Northern Provinces (255,700), and the Southern Provinces (78,600). The government headquarters is at Lagos, pending the completion of the future capital, Kaduna, now building on the main railway line through the province of Zaria in the Northern Provinces. This railway, begun in 1914, is to be known as the Eastern Railway, and will run from the head of the Bonny estuary to Kaduna, where the main line from Lagos to Kano crosses the Lagos River, about fifty miles south of the town of Zaria. The Nigerian Government Railway runs from Lagos to Kano—712 miles; it has a branch from Zaria to the Bauchi tin mines and another from Minna (near Zungeru) to Baro (on the Niger). The entire system is of three and one-half foot gauge.

The colored population is estimated to number in the neighborhood of 16,258,000; Europeans, 2600. Agriculture is practiced by the natives, who raise cotton, cacao, corn, cassava, yams, etc.

For 1915 the total imports were valued at

£5,016,951, and the total exports at £5,660,796. The export of palm kernels was valued at £1,692,711; palm oil, £1,462,162; cotton, £56,351. Total tonnage entered and cleared, 1,129,363, of which 1,068,030 tons British. Revenue, 1915, £2,703,258; expenditure, £3,434,215.

Sir F. D. Lugard was governor-general in 1917.

NIKALGEN. See CHEMISTRY, INDUSTRIAL.

NITROGEN. See CHEMISTRY, INDUSTRIAL; FERTILIZERS.

NITRON. See CHEMISTRY.

NOBEL PRIZES. The literature prize was divided between M. Pontoppidan and M. Gjellerup of Denmark. The legal and literary faculties of Stamboul University urged that the peace prize be given to Emperor William of Germany. The Norwegian Zimmerwold Socialist urged that it be given to Lenine and Trotsky, the leaders of the Russian Bolsheviki. It was finally awarded to the International Red Cross Committee of Geneva. Owing to the disorganized condition of the scientific world, due to the war, no awards were made in this field.

NORFOLK. See MUNICIPAL GOVERNMENT; MUSIC, *Festivals.*

NORFOLK, HENRY FITZALAN-HOWARD, fifteenth Duke of. An English nobleman and Roman Catholic leader, died in London, February 11, 1917. Born in 1847 in Carlton Terrace, the son of the fourteenth Duke of Norfolk, and Augusta, daughter of the first Lord Lyons, he succeeded his father in 1860. He then took his place as ranking member of the English nobility, premier duke, and also premier earl, his line of descent reaching back to the Earl of Arundel, whose title was created in 1139. He was educated at the Oratory School founded by Newman and early showed his interest in affairs of his church. From its foundation in 1871 he was president of the Catholic Union of Great Britain, and he served also as chairman of the Catholic Education Council and of the Catholic Record Society. Queen Victoria made him a Knight of the Garter in 1886 and the following year sent him as special envoy to the Jubilee of Leo XIII. This pope conferred on him the Order of Christ and Pius X that of the Golden Fleece. It is said to have been his influence that gained the red hat for Newman. The Duke served as lord mayor of Sheffield and was chosen as the first chancellor of the University of that city, after helping to found the institution. As postmaster general of Great Britain from 1895 to 1900 he helped to found the imperial penny post. Moreover, he was prominent in Sussex affairs, serving with the Sussex Yeomanry in the South African War, as lieutenant colonel of the 4th Royal Sussex from 1902 to 1912, and as lord lieutenant of the county. As Earl Marshal of England he was master of ceremonies on great occasions such as the coronation of Edward VII and George V. He owned almost 50,000 acres, bringing in an income of some $1,500,000 annually. He gave largely to charities and built a number of churches, in the designing of which he had a large share. It is said that after the death of his first wife in 1887 he decided to enter a monastery, but was dissuaded by the Queen. In 1904 the Duke married again, this time a cousin, who on the death of her father, a large landowner, became Baroness Herries. His young son, the Earl of Arundel, succeeded to the family title.

NORTH CAROLINA. POPULATION. The population of the State in 1910 was 2,202,287, and on July 1, 1917, it was estimated to be 2,434,381.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	3,000,000	60,000,000	$102,000,000
	1916	2,600,000	48,100,000	59,910,000
Wheat	1917	930,000	9,765,000	22,850,000
	1916	870,000	9,135,000	16,078,000
Oats	1917	340,000	5,780,000	5,375,000
	1916	390,000	6,825,000	5,050,000
Rice	1917	300	8,000	16,000
	1916	300	6,000	5,000
Potatoes	1917	50,000	4,500,000	6,435,000
	1916	40,000	3,800,000	5,320,000
Hay	1917	440,000	*a* 528,000	10,402,000
	1916	440,000	572,000	10,010,000
Tobacco	1917	325,000	*b* 204,570,000	64,496,000
	1916	320,000	176,000,000	32,200,000
Cotton	1917	1,453,000	*c* 570,000	78,945,000
	1916	1,451,000	*c* 655,000	63,497,000

a Tons. *b* Pounds. *c* Bales of 500 pounds net weight.

MINERAL PRODUCTION. The value of gold, silver, and copper in the State in 1916 was $29,084. North Carolina ranks first among the Southern States in the production of gold. The total mined in 1916 was 1269 fine ounces, compared with 8321 in 1915. There was also a small silver production.

North Carolina ranks first in the United States in the production of mica, the value of its output in 1916 was $422,580 compared with $300,593 in 1915. It also leads all the States in the production of kaolin, the high-grade white-burning clay used by potters.

TRANSPORTATION. The total railway mileage of the State in 1917 was 4958. There was no construction during the year. The railways having the longest mileage were: Southern Railway Co., 1364; Atlantic Coast Line, 951; Seaboard Air Line, 609; Norfolk Southern Railroad, 783.

FINANCE. The report of the State treasurer for the year 1916 shows a balance in the treasury on December 1, 1915, of $133,435. The total receipts for the year amounted to $5,227,230, and the disbursements to $5,002,607, leaving a balance on December 1, 1916, of $224,623.

EDUCATION. The total school population of the State in 1915-16, the latest year for which the figures are available, was 826,320; of these 560,707 were whites, and 265,613 were colored. The total enrollment in the schools was 649,246, of which number 449,447 were white pupils and 199,809 were colored. The average daily attendance of white pupils was 318,917 and of colored pupils, 127,274. The total number of teachers was 14,550, of which 12,015 were in the rural schools and 2535 in the city schools. The white teachers numbered 11,095 and the colored teachers numbered 3455. The average annual amount paid to teachers was $264.36. The average yearly salary of white teachers was $296.62 and of colored $155.80. The total value of school property was $11,489,881. The value of white school property was $10,205,859 and of colored school property $1,284,022. The number of white rural schools was 5500 and of colored 2356.

Charities and Corrections. The charitable and correctional institutions include hospitals at Morgantown, Raleigh, and Goldsboro, the Epileptic Colony, the School for the Blind, the School for the Colored Blind and Deaf, the Soldiers' Home, the State Prison, the School for the White Deaf at Morgantown, the Jackson Industrial and Manual Training School at Concord, and the Orphanage for White Children and the Orphanage for Colored Children at Oxford.

Legislation. Among the more important measures passed at the legislative session of 1917 are those noted below.

Laws relating to criminal procedure were amended. It was provided that when there were several charges against the same defendant for the same act or transaction, or for two or more acts or transactions connected together, or for two or more transactions of the same class of crimes or offenses, they shall be joined in separate counts in one indictment. Laws relating to divorce were amended in some respects. Among the measures relating to military service, it was provided that whites and blacks shall not be compelled to serve in the same organization, and that blacks shall be under the command of white officers. A check on the abuse of the power to flog prisoners was made by requiring the flogging to take place in the presence of the prison physician or chaplain. The contract system of leasing prisoners was forbidden, and provision was made for a State use system under which the prisoners are put to work to make articles which may be used by the State or its municipalities. The question whether there shall be a constitutional convention was to be referred to the people at the next general election. The act provided for the convention to limit its session to sixty days with a recess of thirty day sittings. Provision was made for improved accounting methods in the State administration offices with the requirement that they shall be adopted and used by all State offices. A budget system was created. A general act was passed providing for the government of municipalities. Among the other things this act required was a modern accounting system, and provided for distinct plans for city government, any one of which may be adopted by the voters of the municipality. A general municipal finance act was also passed. This required an annual budget and limited the period of bond issue to the probable period of usefulness of the improvement made from the proceeds of the bond. Provision was made for the voting of citizens absent in the national service. Laws were passed providing for the inspection and regulation of gasoline and similar products. The preparation of any false statement regarding the curative effect of any alleged remedy was prohibited, as was also the sale or advertisement of patent medicines to cure any disease for which no cure has been found, or the sale of mechanical devices whose claims for the treatment of the disease are false or fraudulent, or which has been declared valueless by the State board of health. Laws relating to conservation were extensively amended. Provision was made for the imposition of an income tax. A special tax commission was created to report a comprehensive taxation plan and especially to make an exhaustive study of the question of separation of the sources of the state and local revenue. A commission was appointed to make a survey of the educational system and to study the school laws and to make recommendation for changes therein. On April 31, the Federal Child Labor Law prohibiting the shipment, in interstate commerce, of products of child labor was declared unconstitutional by a justice of the United States Supreme Court.

State Officers. Governor, Thos. W. Bickett; Lieutenant-Governor, O. Max Gardner; Secretary of State, J. B. Grimes; Treasurer, B. R. Lacy; Auditor, W. P. Wood; Adjutant-General, B. S. Royster; Attorney-General, James M. Manning; Superintendent of Education, J. Y. Joyner; Commissioner of Agriculture, W. A. Graham; Commissioner of Insurance, J. R. Young—all Democrats.

Judiciary. Supreme Court: Chief Justice, Walter Clark; justices, Geo. H. Brown, Wm. A. Hoke, Wm. R. Allen, P. D. Walker; clerk, J. L. Seawell.

NORTH CAROLINA, University of. A State institution of learning at Chapel Hill, N. C. In the fall of 1917 there were 1049 students and 94 members of the faculty. Volumes in the library numbered 80,000. In 1917 Mrs. Robert W. Bingham made a bequest which will provide $75,000 annually for the university's use. The total income in 1917 was $219,548. The university was founded in 1795. President, Edward K. Graham, LL.D., D.C.L.

NORTH DAKOTA. Population. The population of the State in 1910 was 577,056, and on July 1, 1917, it was estimated to be 765,319.

Agriculture. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	590,000	5,310,000	$8,018.000
	1916	510.000	13,515.000	11.353.000
Wheat	1917	7,000,000	56,000,000	112.000.000
	1916	7,150,000	39,325,000	59,774,000
Oats	1917	2.575,000	38,625,000	23,948.000
	1916	2,500,000	53,750,000	23.650.000
Potatoes	1917	90.000	3,870,000	5,031.000
	1916	75.000	6,975,000	8,021.000
Hay	1917	550,000	*a* 484.000	5,366.000
	1916	550.000	935,000	5,610.000

a Tons.

Transportation. The total railway mileage in the State in 1916 was 1460. The railways having the longest mileage of main track were: The Great Northern, 426; The Northern Pacific, 377; Minneapolis, St. Paul, and Sault Ste. Marie, 361.

Finance. The report of the State treasurer for the fiscal year 1917 showed a balance on hand July 1, 1916, of $1,758,162. The total receipts for the year were $6,196,611 and the expenditures were $6,468,953, leaving a balance on hand on June 30, 1917, of $1,485,820. The bonded debt of the State on July 1, 1917, was $462,000.

Education. The total population in the State in 1916 was 186,341. The total enrollment in the graded schools was 138,671, and in high schools 9500. The average daily attendance was 124,996. The male teachers numbered 1329, and females numbered 6664. The average monthly salary of male teachers was $74.99, and of females, $59.84.

Charities and Corrections. The charitable and correctional institutions of the State include the State Reform School at Madan, the State Penitentiary at Bismarck, the Hospital for the Insane at Jamestown, the Institute for the Feeble-Minded at Grafton, the School for the Blind at Bathgate, the School for the Deaf at Devil's Lake, and the Tuberculosis Sanatorium at Dunseith.

POLITICS AND GOVERNMENT. On January 23, Governor Frazier signed a measure extending the franchise to women for all except constitutional offices. On July 10 John M. Baer, the candidate of the Farmers' Non-Partisan League, defeated O. B. Burtness, Republican, for Congress.

The success of the Farmers' Non-Partisan Political League in the State election of November, 1916, gave to that body the State government, and the control of the legislature. So great a mass of legislation was proposed to be enacted, by the members of the league, that the leaders in the legislature recommended the turning of the body into a constitutional convention, which should enact and submit to the people a revised constitution. This was made necessary by the fact that the legislature, under the present constitution, could not pass all the bills which had been presented.

Among the recommendations in Governor Frazier's message to the legislature, were the State ownership of terminal elevators, flour mills, packing plants, cold storage plants, exemption of farm improvements from taxation, and the State inspection of rural credit banks. As political measures, the league favored the short ballot, the four-year term for State officials, equal suffrage for men and women, the initiative, referendum, and recall.

LEGISLATION. Among the more important measures passed at the legislative session of 1917 are those noted below:

Several amendments were proposed to the State constitution relating to the judicial system and the administration of justice. One of these provided that the concurrence of four out of five judges of the Supreme Court shall be necessary to declare a law unconstitutional. Measures were enacted providing for the absent voting for citizens of the State engaged for the national service. The Torrens system of the registration of land titles was put into effect. A constitutional amendment was proposed creating a hail insurance fund for the protection of the farmers' crops. Several measures relating to conservation were enacted. The banking laws of the State were amended in important details.

STATE OFFICERS. Governor, Lynn J. Frazier; Lieutenant-Governor, A. T. Kraabel; Secretary of State, Thomas Hall; Treasurer, John Steen; Auditor, Carl Kositzky; Attorney-General, Wm. Langer; Superintendent of Education, N. C. MacDonald; Commissioner of Agriculture, John N. Hagan; Commissioner of Insurance, S. A. Olsness—all Republicans.

JUDICIARY. Supreme Court: Chief Justice, Andrew A. Bruce; Associate Justices, J. E. Robinson, L. E. Birdzell, R. H. Grace, and A. M. Christianson.

NORTH DAKOTA, UNIVERSITY OF. A co-educational State institution located at Grand Forks, N. D. The post office is University, N. D. In the fall of 1917 there were 772 students and 73 members of the faculty; over 150 students left the institution to enter government service and 8 members of the faculty were on leave engaged in war work. President Frank L. McVey resigned in 1917 after serving as head of the university for eight years, and Thomas Franklin Kane, Ph.D., LL.D., was elected to succeed him, Earle J. Babcock, Sc.D., meanwhile acting president. The family of James F. Twamley, an early trustee, established a student loan fund in 1917. Productive funds in 1917 amounted to $1,721,262 and the income therefrom to $65,000. Volumes in the library numbered 58,915. The university was founded in 1883.

NORTHERN TERRITORY. A territory of the commonwealth of Australia. It is situated in the central and northern part of the continent between Western Australia and Queensland and extends south to South Australia at lat. 26° S. Formerly the territory belonged to South Australia, from which it was transferred to the commonwealth January 1, 1911. The estimated area is 523,620 square miles, which is about 17.6 per cent of the area of the commonwealth and nearly twice the land area of Texas. The estimated population, September 30, 1916, was 4956, as compared with 3310 (2734 males, 576 females) at the 1911 census. These figures are exclusive of full-blooded aboriginals, whose number is variously estimated at from 20,000 to 50,000. The capital is Darwin, situated on Port Darwin, an excellent harbor; it had 958 inhabitants in 1911. From Darwin a railway extends inland 145 miles to Pine Creek. Administrator of the Northern Territory, J. A. Gilruth. See AUSTRALIA.

NORTHWESTERN COLLEGE. An educational institution at Napierville, Ill. It is supported by the Evangelical Association, but it is non-sectarian in its requirements for admission. In the fall of 1917 students numbered 340 and there were 26 members of the faculty; 40 students left to enter government service before the end of the year. T. J. McCarter, of the University of Texas, was made professor of physics. Volumes in the library numbered 12,500. Productive funds in 1917 amounted to $211,000 and the income therefrom to $10,642. The college was founded in 1861 and incorporated in 1876. Edward Everett Rall, Ph.D., was inaugurated president on May 17, 1917.

NORTHWESTERN UNIVERSITY. An institution of learning under the auspices of the Methodist Episcopal Church, located at Evanston, Ill. In the fall of 1917 there were 3878 students and 483 members of the faculty; nearly 800 alumni and students entered the national service in 1917. Many of the faculty, including deans of the schools of engineering, law, commerce, and oratory have been given leaves of absence. Military training is required in the colleges of liberal arts and engineering. Gifts to endowment and other permanent funds of the university amounted to over $500,000 in 1917. The total of productive funds is $4,384,313 and the income therefrom in 1917 was $274,337. Volumes in the library numbered 170,000, not including 80,000 pamphlets. The university was founded in 1861. President ad interim, Thomas Franklin Holgate, LL.D.

NORTHWEST PROVINCES. The Prairie Provinces (q.v.) of Canada.

NORTHWEST TERRITORIES. That part of Canada not comprised within any province or the Yukon Territory. On the west, it is bounded by the Yukon Territory; on the south, it is separated by the 60th parallel from British Columbia and the Prairie Provinces. It does not include any of the mainland east of Hudson Bay, but Baffin Land and other islands north of the continent belong to the Northwest Territories. Estimated area, 1,242,224 square miles, of which 34,298 water. The population is very sparse, and the means of subsistence scanty. Population according to the 1911 census, 5900.

NORWAY. A constitutional monarchy of northern Europe; united with Sweden under the same king from November 4, 1814, to June 7, 1905, when the union was dissolved. Norway, the western and northern portion of the Scandinavian peninsula, is about 1100 miles in length, its greatest width about 250 miles. It is divided into twenty provinces, or amter. The coast-line is extensive, deeply indented with numerous fiords, and fringed with an immense number of rocky islands. The surface is mountainous, consisting of elevated and barren tablelands, separated by deep and narrow valleys. Christiania is the capital. Area, 322,909 sq. km. (124,675 sq. mi.); population, 2,357,790; density, 7.6.

The majority of the people are Lutherans (2,329,229 belonging to the state church and 15,287 to the Free Lutheran Church); Methodists and Baptists are next in numbers (10,986 and 7659 respectively). All creeds are tolerated, but Jesuits are debarred.

PRODUCTION AND SUPPLIES. The cultivated area is about one-thirtieth of the country; forests cover nearly one-fourth; the rest consists of highland pastures or uninhabitable mountains. Agriculture, though pursued with some vigor of late, is unable to furnish sufficient produce for home consumption; hence it has been necessary to import considerable quantities of food and raw materials. Since the entrance of the United States into the European War and the shutdown on exportation to Scandinavian countries of materials suitable for reëxportation into Germany, these countries have faced actual starvation. Upon guarantees avoiding reëxportation, agreements were entered into between the United States and the Scandinavian countries for limited shipments of certain supplies. Norway was the first of the northern European neutrals to be rationed. The statement issued by the War Trade Board reads in part:

"The following schedule of Norway's allotment of commodities containing quantities determined has been handed to Dr. Nansen:

"Proposed schedule of commodities agreed to by the United States and her associates in the war as sufficient to cover Norway's 1918 requirements considering the existing conditions: Bread grains, including rice, 300,000 metric tons; starches, 1000 metric tons; cocoa, 1400; coffee, 14,500; tea, 160; sauces and pickles, 80; syrup, 5000; spices, 382; fruit, dried, 4000; fruit, fresh, 6000; sugar, 50,000; pork and beef, 10,000; vegetable and animal oils, 10,000; mineral oils, 76,500; oil seeds (for seed crushing plants), 20,000; silk, yarn and tissues, 110; cotton, raw, yarn, and manufactures, 8000; wool, wool yarns, and products, 3700; corkwood, 900; tin, raw, 80; lead, 1000; antimony, 12; asbestos, 350; borax and boric acid, 80.

"In addition to the quantities mentioned, further quantities may be granted where it is found that the amount stated is not sufficient for the needs of the country. Norway's requirement of oil cake, when ascertained, will be allowed. There is to be included in the foregoing schedule certain textiles, hides and skins, and a large tonnage of raw phosphate for agricultural purposes, together with necessary agricultural machinery and other articles to assist Norway in increasing her own production of foodstuffs.

"Norway's import of the foregoing quantities to be conditioned upon her continuing certain exports to the Powers associated with the United States. The War Trade Board agrees to the exportation of 48,000 tons export weight of fish and fish products per annum to the Central Powers.

"The exportable surplus of copper controlled by the United States and its associates is not sufficient to meet all demands. But so far as the war needs of the United States and its associates permit the board will assist in every way in supplying the copper needed by Norway. The board agrees to Norway's export of copper to the Central Powers only in compensation for copper received from those Powers in manufactured form, plus 5 per cent to cover wastage.

"Norway will, of course, agree that no commodity which the United States or its associates may furnish to it shall be exported to the Central Powers, and that no commodity except fish and fish products, upon which Norway has in the past placed restrictions on export, by virtue of an agreement or understanding between herself and British or French governments before the entry of the United States into the war, shall be exported to the Central Powers. And in case Norway shall export to any neutral country contiguous to the Central Powers, or either of them, any commodity which Norway agrees not to export to the Central Powers, Norway will provide by agreement with the government of such neutral country that no commodity so exported shall be reëxported directly or indirectly to the Central Powers.

"As to the duration of the proposed agreement, this board agrees that it should be operative for the period of the war, subject to termination by either party at the expiration of one year from the date of the agreement and at any time thereafter, provided three months' notice shall be given of such termination."

Below are seen areas devoted to main crop and yield for two years:

	Hectares		*Quintals*	
	1917	*1916*	*1917*	*1916*
Wheat	5,533	5,526	65,712	86.063
Rye	19,585	19,713	166,613	239,157
Barley	39,897	39,800	653,244	782,157
Oats	124,094	120,015	1,713,645	2,282,940
Potatoes ..	46,162	46,162	7,547,819	7,944,110

The value of the principal crops in 1916 is reported as follows: Hay, $57,687,131; potatoes, $11,709,624; oats, $12,241,918; turnips, $1,172,361; barley, $5,240,445; others, $3,351,098; total, $91,402,577.

Live stock on farms is shown below for two years:

	1916	*1915*	*Difference*
Horses	189,175	186,217	+ 2,958
Cattle	1,119,306	1,120,517	— 1,211
Sheep	1,281,030	1,329,559	— 48,529
Goats	230,055	240,303	— 10,248
Pigs	221,217	208,522	+ 12,695

Fisheries. Norway's total catch of codfish in 1916 was considerably below the average (about 77,000,000 for the period 1911-15), being only 51,400,000, compared with 66,800,000 in 1915 and 81,500,000 in 1914; but the quality of the fish and the yield of oil and roe were better than usual. Very high prices prevailed, the value of the haul for 1916 being estimated at $20,100,000, against $9,380,000 for 1915. Large quantities were sold in fresh condition, and most of the salted fish went to the belligerent countries.

The total quantity of salted codfish exported from Norway in 1916 was 72,752,500 pounds of split cod (96,342,000 in 1915); 104,719,560 pounds salted in bulk (56,217,870 in 1915); and 42,990,140 pounds salted in boxes and barrels (27,116,850 in 1915).

Although the exports of cod-liver oil from Norway in 1916 were little more than half those in 1915 their value was greater, on account of unprecedented prices, amounting to about 30,000,000 kroner ($8,040,000), compared with 20,000,000 kroner ($5,360,000) in 1915. The past year's shipments were 84,500 barrels, of which 50,000 barrels were steam-refined, 14,500 raw, and 20,000 brown oil; in 1915 there were 139,300 barrels (100,000 steam-refined, 5300 raw, and 34,000 brown oil). Prices of steam-refined cod-liver oil were $80.40 per barrel in February, 1916 ($22.78 in February, 1915); $107.20 in March, 1916 ($44.22 in March, 1915); $120.60 in July, 1916 ($67 in July, 1915); and $127.30 from August to December, 1916 ($80.40 for the corresponding period of 1915). Prices of brown cod-liver oil in 1915 and 1916 were as follows: February, $64.32 per barrel; March, $24.12 and $68.34; July, $26.80 and $93.80; and from August to December, $50.92 and $93.80.

Fish roe brought about $13.40 per barrel during the first part of 1916. The price advanced to $21.44 and $22.78 per barrel, and as much as $26.80 was paid for a short while, but quotations later fell to the former figures. Of the 45,000 barrels of roe exported from Norway in 1916 about 30,000 were taken to France, Spain, and Portugal.

The catch of herring was exceptionally good and prices were high. The government bought the entire haul of mackerel at a fixed price.

On account of the unprecedented demand in Europe for canned fish all reserve stores were disposed of at a high price. Norway's total export of this product was 82,019,290 pounds in 1914, 114,107,972 pounds in 1915, and 84,839,839 pounds in 1916. The large amount shipped in 1915 represents the surplus of the storehouses, which must be replaced before exports resume their normal course.

Commerce and Communications. In the table below are seen imports and exports for three years, values in kroner (the par value of the krone is 26.799 cents):

	1913	*1914*	*1915*
Imports	552,433,600	567,276,700	867,967,800
Exports spec.	380,912,100	394,390,000	660,996,400
Exports transit *	11,700,800	15,631,600	15,763,400

* 1913, direct transit not included.

The following table shows in thousands of kroner leading imports for consumption and exports of domestic produce for the year 1915:

Imports	*1,000 kr.*	*Exports*	*1,000 kr.*
Cereals, etc.	105,809	Animal prods.	228,701
Ores	118,422	Timber	118,408
Machinery	129,772	Grease, etc.	79,065
Oils, etc.	69,518	Hair, skins	14,967
Textiles	59,106	Paper, etc.	46,709
Metal mfrs.	26,788	Metals	42,899
Provisions	60,971	Mineral mfrs.	62,031
Metals	58,336	Minerals, raw	36,450
Yarn, etc.	39,580	Ships	22,275
Wooden wares	23,244	Live animals	1,010
Animal prods.	17,065	Rope, etc.	1,692

Countries of origin and destination follow, with the value of the 1915 trade given in millions of kroner:

	Imps.	*Exps.*		*Imps.*	*Exps.*
Germany	155.2	192.7	Belgium	.4	.2
U. K.	253.6	187.7	France	13.9	27.6
Sweden	75.2	67.5	Spain	22.4	72.6
Russia	2.5	12.1	Italy	7.0	9.7
U. S.	221.1	57.6	Portugal	4.6	8.9
Denmark	39.1	33.2	Other	...	...
Netherlands	36.6	18.2			
			Total	867.9	676.7

Total vessels entered at Norwegian ports in 1915, 10,811, of 5,344,193 tons; cleared, 10,993, of 5,418,075. The merchant marine included January 1, 1917, 2036 vessels, of 2,562,395 tons.

Communications. Length of railways in operation December 31, 1916, 1685 miles; private lines, 288 miles. A further and very substantial temporary increase in the rates on the Norwegian State Railways, both for passenger and goods traffic, was decided upon owing to the great increase in operating costs. Including previous temporary increases in the railway rates, the rise amounted to 80 per cent for first and second-class passengers, 60 per cent for third-class passengers, 100 per cent on passengers' luggage, and 100 per cent on express and ordinary goods traffic, except articles of food, feedstuffs, manure, and fuel, for which commodities the increase amounts to 70 per cent, and milk, for which it is 50 per cent. It was understood that these prices would be revised with the return of more normal conditions. State telegraph lines, 14,070 miles; wires, 61,707. Telegraph receipts for 1916, 13,731,053 kroner; expenditure, 7,771,562 kroner.

Shipping. Shipbuilding in 1916 was below normal, owing principally to labor troubles and the delay and difficulty experienced in obtaining materials. The total number of Norwegian ships of over 100 tons lost from war causes in 1916 was 186 and their combined tonnage 260,000, of which 109 ships of 149,000 tons were lost in the last quarter of the year.

The increased demand for Norwegian tonnage due to the war has caused the shipowners of Stavanger and Haugesund to place orders for new ships abroad, especially in the United States. Shipowners for the port of Stavanger alone have contracted for more than 120,000 dead-weight tons, mostly with Pacific coast shipyards.

Freight rates to and from the United States had advanced about 700 per cent since August, 1914. The difficulty of obtaining tonnage from America has complicated matters, and shipments have sometimes been delayed from six to eight months after the invoices have been received. The demand for Norwegian tonnage in the United States seems to have influenced the value of the dollar. In 1916 it never reached the normal of 3.731 kroner, but generally ranged from 3.40 kroner ($0.91) to 3.60 kroner ($0.96). This rate prevailed, notwithstanding the relatively high value of the American unit compared with that of other countries and the balance of trade favorable to the United States. Norway's total merchant marine contains 2036 vessels, with a gross tonnage of 2,562,395.

FINANCE. The krone (worth $0.268) is the monetary unit. In the following table are shown revenue and expenditure for comparative years:

	1911-12	*1913-14*	*1914-15*
Revenue	140,730.210	175,962,000	197,339,000
Expenditure	132,932,368	166,716,000	186,448,000

The 1916-17 budget is detailed below, amounts in thousands of kroner:

Revenue	*1,000 kr.*	*Expenditure*	*1,000 kr.*
Customs	54,000	Railways	35,868
Income tax	30,000	Defense	33,468
Railways	36,302	Finance	6,711
Post Office	12,000	Instruction	20,840
Tels. and tels.	10,200	Justice	5,942
Domains	7,065	Interior	17,977
Excise, spirits	5,060	Highways	9,036
Excise, beer	5,000	Debt	5,877
Stamps	4,600	Interest	16,279
Succession	1,500	Foreign affairs	1,975
Fees	1,250	Civil list	748
Mines	1,002	Storthing	904
Misc.	....	Misc.	....
Total ord.	186,000	Total ord.	186,000
Extraord.	73,555	Extraord.	73,555
Total	259,555	Total	259,555

The 1917-18 budget was estimated to balance as follows: 237,500,000 kr. ordinary, 30,722,875 kr. extraordinary. Public debt, June 30, 1915, 421,323,752 kr. See FINANCIAL REVIEW; PRICES.

NAVY. See NAVAL PROGRESS.

GOVERNMENT. The executive power is vested in a king (Haakon VII, elected November 18, 1905), aided by a council of state composed of responsible heads of departments. The Storthing (representative), made up of the Lagthing and the Odelsthing, is the legislative body.

Heir-apparent, Prince Alexander, born July 2, 1903; renamed Olaf upon his father's accession to the throne. The Cabinet is made up (1917) as follows: Prime Minister, Gunnar Knudsen; N. C. Ihlen, Minister of Foreign Affairs; A. T. Omholt, Finance and Customs; L. K. Abrahamsen, Labor; O. Blehr, Justice and Police; K. Friis-Petersen, Commerce, Navigation, Industry, and Fisheries; C. Th. Holtfodt, Defense; J. Lövland, Worship and Instruction; F. A. M. O. Nalum, Public Works; O. J. Vik, Food and Supplies; Th. Prydz, Industrial Provisions. This Cabinet was formed in January, 1913.

On November 29 a conference of the Scandinavian Powers was held at Christiania at the instance of King Hakon of Norway and King Gustav of Sweden. The proceedings were not reported in the press and there was much speculation as to the purpose of the meeting. In certain quarters it was explained as an endeavor on the part of the three Scandinavian countries to find a means of self-defense against the Central Powers. The strong feeling in Norway against Germany on account of the latter's submarine warfare and especially the reported brutality of the Germans in firing upon defenseless sailors and passengers on merchant vessels was said to have brought Norway to the verge of war. The meeting was interpreted by some as the result of Norway's efforts to coöperate with Sweden and Denmark in measures of self-protection.

NORWEGIAN LITERATURE. See SCANDINAVIAN LITERATURE.

NORWEGIAN SÄNGERFEST. See MUSIC, *Festivals*.

NOTRE DAME, UNIVERSITY OF. A Roman Catholic institution for the education of men, located at Notre Dame, Ind. In the fall of 1917 there were 1285 students and 91 members of the faculty. Volumes in the library numbered 103,000 and there were in addition 151,000 manuscripts. A gift of $85,000 was received for a residence hall and one of $17,000 for scholarships. New chemistry laboratories were built in 1917. The university was founded in 1842. President, Rev. John Cavanaugh, D.D., C.S.C.

NOVA SCOTIA. One of the Maritime Provinces of Canada. Capital, Halifax, chief naval station of the Dominion. The estimated area is 21,428 square miles, of which 360 water. Population (1911), 492,338, the increase over 1901 being 7.13 per cent. Halifax had 46,619 inhabitants in 1911; Sydney, 17,723; Amherst, 8973; Sydney Mines, 7470; Yarmouth, 6600; New Glasgow, 6383; Truro, 6107; Spring Hill, 5713; North Sydney, 5418; Dartmouth, 5058. There were no other towns in 1911 having more than 5000 inhabitants.

The provincial government is administered by a lieutenant-governor, appointed for five years by the governor-general of Canada; he acts through an executive council, or responsible ministry. The legislature consists of two chambers: the Legislative Council of 21 members appointed by the crown for life; the House of Assembly of 43 members elected for five years. In the House of Commons of the 13th Canadian Parliament, elected December 17, 1917, Nova Scotia is represented by 16 members. The lieutenant-governor in 1917 was McCallum Grant, appointed November 29, 1916, to succeed David MacKeen, who died November 13. Premier, G. H. Murray. See CANADA.

NYASSALAND PROTECTORATE. A British protectorate (formerly British Central Africa) extending from German East Africa to Portuguese East Africa, between Rhodesia and Lake Nyassa, and having an area stated at 39,801 square miles. Population (1916), 785 Europeans, 379 Asiatics (exclusive of Sikh troops), 1,140,000 natives. The administration headquarters are at Zomba; the chief town is Blantyre, in the Shiré Highlands. The cultivation of coffee has declined, that of cotton increased, 106,086 pounds being exported in 1915-16. Tobacco exported in 1915-16, 3,706,203 pounds. Total imports, 1915-16, £253,403; exports, £263,668. Local revenue, 1915-16, £137,911; expenditure, £125,666. There is a railway (129 miles) from Blantyre to Port Herald; its extension to the Zambezi has been undertaken. Steamships ply on Lake Nyassa and on the rivers of the protectorate.

OATS. The average annual world's production of oats is normally nearly four and one-half billion bushels. In most countries furnishing estimates of their production in 1917 the yield was satisfactory, but the data available covered only about 60 per cent of the oat-producing areas usually reporting. Over 90 per cent of the crop was produced in the northern hemisphere, but the production of the countries reporting, according to provisional figures published by the International Institute of Agriculture, Rome, aggregated only 2,682,210,000 bushels, which was 15½ per cent above their production in 1916. About one-half of the world's crop in peace times is produced in the United States and Russia, and over three-fourths of it by these two countries in conjunction with Germany, Canada, and France, given in the order of their importance.

The production of Great Britain and Ireland in 1917 was estimated at 248,741,000 bushels, or considerably above the average. The yield of France, not including invaded territory, was reported at 237,447,000 bushels. Canada produced, according to estimates, 393,570,000 bushels, or about 12 per cent more than in 1916, the increase being due to a larger acreage rather than to a higher yield. The production of the United States as estimated by the Department of Agriculture was 1,587,286,000 bushels on an area of 43,572,000 acres, both production and acreage never having been surpassed. The production was greater by 335,449,000 bushels and the area by 2,045,000 acres than in 1916, and by 356,787,000 bushels and 4,869,000 acres than the average production and acreage, respectively, of the five-year period 1911-15. The average yield per acre, 36.4 bushels, was higher only in 1912 and 1915. The average farm value on December 1, 1917, was 66.9 cents per bushel, as compared with 52.4 cents on the corresponding date the year before, and on this basis the total value of the crop amounted to $1,061,427,-000, as against $655,928,000 in 1916 when the bushel value was 52.4 cents. The bushel value and the total value were without precedent, and it was the first time in the history of the country that the value of the crop passed the billion dollar mark. The acreage of winter oats in the Southern States as reported by the Department of Agriculture was 3,278,000 acres, an increase of 7.3 per cent over the acreage of 1916.

About 7 per cent of the entire oats area of the United States is winter- or fall-sown oats. The world's trade in oats was very much restricted through the export regulations and prohibitions imposed by most governments, and the domestic trade in many countries was regulated through the fixation of prices for requisition for army use and for ordinary transactions. Germany in March, 1917, fixed the price at $1.37 per bushel, Austria in August at $1.06, Hungary in July at $1.29, Great Britain in August at $1.03, Italy in August at $1.00, Switzerland in October at $1.62, etc. The prices varied in different countries and were changed from time to time as conditions demanded.

OBERLIN COLLEGE. A non-sectarian coeducational institution located at Oberlin, Ohio. In the fall of 1917 there were 925 students in the college of arts and sciences; 42 in the graduate school of theology; 330 in the conservatory of music, and 152 members of the faculty. In the library there are 175,625 bound volumes and 185,469 pamphlets. The Dudley R. Allen Art Building, which cost $200,000, was completed in 1917. Productive funds amounted to $5,183,684 and the income from the endowment to $130,700. The college was founded in 1833. President, Henry Churchill King, D.D., LL.D.

O'BRIEN, JOHN. Captain John O'Brien, known throughout the world as a soldier of fortune, and having the soubriquet of "Dynamite Johnny," died on June 21, 1917. He was born in 1837 in New York City of Irish parents. He served in the Civil War as the third officer of the *Illinois*, which ship was soon mustered out of Federal service. He then sailed unknowingly on a ship that was to carry to Mexico a cargo of munitions, which was ultimately to be delivered to the Confederates. His first filibustering expedition was in 1885, when he carried arms and ammunition to the revolutionists in Colombia. He earned the title "Dynamite Johnny" when he carried a cargo of 60 tons of dynamite to revolutionists in Cuba in 1888. He helped supply Gen. Hippolyte, who was carrying on a successful revolution against Gen. F. D. Légitime in Haiti in 1889. He sided with the rebels of Cuba in the "Ten Years' War" and carried many cargoes of munitions to them despite the watchfulness of the United States Secret Service and the Spanish blockading squadron. Just before he died he was the official pilot of Havana.

OBSERVATORIES. See ASTRONOMY.

OCCUPATIONAL DISEASES. During the past few years the increasing attention to problems of workmen's compensation has been accompanied by a growing demand that diseases of occupation should be treated in a manner similar to industrial accidents. Only a few years ago the number of diseases directly connected with specific industries was very small, but attention once centred upon the problem revealed numerous ailments directly traceable to occupational hazards. The importance of these risks has appeared greater and greater with every new investigation. Consequently we have annually a considerable number of special investigations of industrial diseases; we have a growing volume of legislation requiring the reporting to public authorities of all cases of occupational disease; and we have an increasing number of States in which compensation of the same nature as that provided for industrial accidents is authorized for those whose health has been undermined in specific ways by industrial conditions.

One of the notable reports of the year was a discussion by the medical, pathological, and epidemiological sections of the Royal Society of Medicine of Great Britain, of "the origin, symptoms, pathology, treatment, and prophylaxis of toxic jaundice observed in munition workers." Until the outbreak of the war toxic jaundice in industry was nearly always a form of arsenic poisoning; but subsequently to the outbreak of war it was observed among employees in airplane factories and workers in trinitrotoluol (T.N.T.), a compound extensively used in munitions manufacture. The number of cases rapidly increased in England; up to July, 1916, there were seventy cases with twelve deaths in airplane works, and during 1916 there were 181 cases in T.N.T. works with fifty-two deaths.

The United States Bureau of Mines has issued *Safe Practice at Blast Furnaces, A Manual for Foremen and Men; Carbon Monoxide Poisoning in the Steel Industry;* and *Occurrence and Mitigation of Injurious Dust in Steel Works;* both the latter being prepared by J. A. Watkins. That bureau also issued *Organizing and Conducting Safety Work in Mines,* prepared by H. M. Wilson and J. R. Fleming. The New York State Industrial Commission completed an investigation into the health hazards involved in the manufacture of paris green. The commission printed a set of rules to be observed by workers in paris green establishments which are typical of the minute attention given to the necessary practices to be observed by workers in many modern industries. For example, workers are advised not to hang clothes to be dried in the dry room; not to leave the factory in work clothes; not to place work clothes and street clothes in the same locker; not to eat in or about the factory except in the lunch room; to always wash face and hands with hot water and soap before eating; not to scratch or touch any part of the body before washing the hands; not to sweep the floor with a broom; to keep gloves clean on the inside; to bathe at home daily; to drink milk instead of beer and whiskey; to tie clean cotton waste twice daily over nose and mouth as a respirator; to keep the dust settled; and to keep hair, mustache, and finger nails short. In addition, numerous recommendations are made to employers having to do with the cleaning of work rooms, halls, stairs, and lunch rooms, the periodic medical examinations of employees, the provision of overalls, gloves, respirators, lunch rooms, wash rooms, and proper rest periods. The New York State Commission also gave considerable attention to dangers of the airplane industry. From an investigation of eight factories in the State it found that in only three was any considerable attention given to the health of the employees. The danger in these factories is connected with the application of a varnish, popularly called "dope," with which the wings, rudders, and other parts of airplanes are covered. The newness of the industry and the excessive speed demanded have made difficult the introduction of health measures in this very dangerous occupation. Here again the commission drew up a series of health recommendations.

The Bureau of Standards of the Department of Commerce has issued an article prepared by W. W. Coblantz and W. B. Emerson entitled *Glasses for Protecting the Eyes from Injurious Radiation.* The purpose was to furnish information of means to protect the eyes from infrared or so-called heat rays and ultra-violet rays of light. Continued exposure to either class of rays produces conjunctivitis or cataract, the heat rays now being believed to be in industry a more serious danger than the ultra-violet rays. The Bureau of Labor statistics, in compliance with a resolution of the Council of National Defense of April 7, began the publication of summaries of "reports of the committee appointed by the British Minister of Munitions to investigate conditions affecting the health and welfare of workers." It also published in its *Industrial Accidents and Hygiene Series* a special report by Dr. John B. Andrews on "Anthrax as an Occupational Disease," and the report by Dr. Hamilton noted below.

MINERS' CONSUMPTION. The Public Health Service investigated 433 cases of miners' phthisis among the zinc miners in southwestern Missouri. The zinc ore is imbedded in a very hard flint containing over 9 per cent of silica. This forms a very fine, hard, sharp, and insoluble dust, which on account of drilling and blasting permeates the air of the mine and becomes extremely irritating to the lungs of the worker. In all 720 miners were examined; 433 had miners' consumption; and 103 also showed tubercle bacilli in their sputum. It was found that five years' steady work under such conditions was nearly certain to produce the first stages of the disease. It was found that 56 per cent of the 433 afflicted miners had begun work underground before the age of 21. Investigation was made of 190 cases of death in 130 out of 480 families visited. The average age at death of the miners was 37 years; the average number of years mining, 13.7; the average number of years in hard rock, 8.6; the average number of years of disability before death, 1 year; hence in that district miners dying from consumption do so within 10 years after the beginning of exposure to siliceous dust.

MUNITION PLANTS. Under the direction of the United States Bureau of Labor Statistics Dr. Alice Hamilton made an extensive investigation into the occupational dangers in plants manufacturing explosives and filling shells. Results were published in *Bulletin 219.* She visited 41 factories employing 30,000 workers exposed to poisons, but secured information from only 28 plants. In these there were 2507 cases of industrial poisoning and 53 deaths during 1916. Of the cases 1389 were poisoning due to nitrogen oxides and nitric acids; 702 to trinitrotoluol; 205 to anilin; and 111 to fulminate of mercury. Of the deaths 28 were due to nitrogen oxides; 13 to trinitrotoluol; and 7 to benzene and toluol.

NEW YORK. The Department of Health of New York City established a Labor Sanitation Conference in coöperation with trade unions of the city. Representatives of 750,000 unionists drew up a resolution approving the work of the Division of Industrial Hygiene of the Health Department and presented the same to Mayor Mitchel. A movement was begun to secure more adequate sanitary inspection. An estimate showed, however, that fifty additional inspectors at a minimum salary of $1080 each, besides $10,000 for educational work, would be necessary to put industrial health inspection on a proper basis. This conference gave special attention to anthrax, due to handling of wool, hides, and skins; hydrofluoric acid in glass-blowing plants; other chemical dangers; and the bad effects of conditions in laundries.

ABROAD. Similar problems to the foregoing were given attention in Canada, England, France, and elsewhere. Especially was this true in Great Britain where the Health of Munition Workers Committee made numerous inquiries into the relations of hours and conditions of labor to health and efficiency of workers. Reports were made by it on various "special industrial diseases," effects of ventilation and lighting, eye strain in industry, effects of long hours, Sunday labor, and fatigue, tetrachlorethane poisoning, dope poisoning, and numerous aspects of the employment of women and children as related to health.

According to the *Labor Gazette,* there were in the first nine months of 1917 a total of 589 cases of industrial diseases reported to the Home Office, an increase of 65 over the same period of 1916. In these 9 months there were

86 fatal cases, as against 75 in 1916. Of the total cases, 161 were due to toxic jaundice referred to above, while 40 of the deaths were due to the same cause.

OCEANIA. See Anthropology.

OESEL ISLAND. See Livonia.

OFFICERS' TRAINING CAMPS. See Military Progress.

OHIO. Population. The population of the State in 1910 was 4,767,121, and on July 1, 1917, it was estimated to be 5,212,085.

Agriculture. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	3,950,000	150,100,000	$204,136,000
	1916	3,600,000	113,400,000	102,060,000
Wheat ...	1917	1,870,000	41,140,000	83,926,000
	1916	1,600,000	21,600,000	36,504,000
Oats	1917	1,775,000	78,100,000	49,984,000
	1916	1,717,000	48,076,000	25,480,000
Potatoes .	1917	160,000	16,000,000	22,880,000
	1916	140,000	6,300,000	11,466,000
Hay	1917	2,925,000	*a* 4,154,000	78,926,000
	1916	8,250,000	5,102,000	54,081,000
Tobacco .	1917	103,200	*b* 99,072,000	24,768,000
	1916	100,000	95,000,000	12,350,000

a Tons. *b* Pounds.

Mineral Production. There was great progress in the coal industry of the State in 1916. The production according to the United States Geological Survey was from 22,434,691 net tons, valued at $24,207,075 in 1915, to 34,728,219 tons, valued at $46,150,907, an increase of 55 per cent in quantity and 91 per cent in value, in 1916. The production in 1913, the banner year for the State was 36,200,000 tons. In 1914 it was 18,343,000 tons. In January, February, and March of 1916, the production averaged nearly 3,000,000 per month. April showed a decrease of nearly half, but after the lake season began, the output increased, and in June it had reached the high record of the year, more than 3,500,000 tons. From July to October an almost even rate was obtained, but in November and December there was a slight decrease. About 5,000,000 tons of coal from Ohio were shipped up the lakes, a larger quantity shipped than in any previous year except 1913. There was a substantial increase in the quantity of coal taken by the railroads for fuel, and the largest factors were greater shipments by the lakes and increased demands from industrial plants, chiefly within the State. During the period of labor troubles in western Pennsylvania, coal from Ohio was shipped into the Pittsburgh district to supply the shortage, and in the last quarter of the year, Ohio coal was shipped by way of Buffalo to New York and New England. Lack of transportation facilities was not felt in Ohio as in other fields, probably because of the shorter average haul to market.

The production of petroleum in the State in 1916 was 7,774,511 barrels, valued at $16,154,940, compared with a production of 7,825,326 barrels in 1915, valued at $10,061,493, a decrease of 1 per cent in quantity, but an increase of 61 per cent in value. Natural gas to the value of $15,601,144 was produced in the State in 1916, compared with $17,391,060 in 1915.

Transportation. The total railroad mileage of the State on June 30, 1914, the latest for which statistics are available, was 9147.

Finance. The total receipts during the year 1917 were $20,842,248. The total expenditures were $21,161,700. At the beginning of the year there was a balance on hand of $7,105,631, and at the end, $6,791,829. The State as a whole had no bonded debt, but the cities and other municipalities had a debt of $414,163,520.

Education. The total school population in 1916-17 was 1,351,573. The total enrollment in the public schools was 980,749, with the average daily attendance of 790,796. The total number of female teachers was 25,541, and of male teachers 687. The total expenditure for school purposes was, for the year 1915-16, $45,418,465.

Charities and Corrections. The charitable and correctional institutions include the following: The Athens State Hospital, the Cleveland State Hospital, the Columbus State Hospital, the Dayton State Hospital, the Lima State Hospital, the Longview State Hospital at Cincinnati, the Massillon State Hospital, the Toledo State Hospital, the Ohio Hospital for Epileptics at Gallipolis, the Institution for Feeble-Minded at Columbus, the State School for the Blind at Columbus, the State School for the Deaf at Columbus, the Ohio State Sanatorium at Mount Vernon, the Ohio Soldiers' and Sailors' Home, the Madison Home at Madison, the Boys' Industrial School at Lancaster, the Girls' Industrial School at Delaware, the Ohio Penitentiary at Columbus, the New Prison Farm at London, the Ohio State Reformatory at Mansfield, the Ohio Reformatory for Women, the Ohio State Brick Plant at Junction City.

Politics and Government. In Ohio politics 1917 was the "off year." There were no State elections. The municipal elections were marked by large increases in the Socialist strength. Two Socialists were chosen members of the Cleveland city council and one was elected to the Cleveland board of education. Republicans were generally successful in the local elections, electing mayors in Cleveland, Cincinnati, and Columbus. Cincinnati adopted a new home-rule city charter which goes into effect January 1, 1918. It is considered a conservative instrument and introduces no innovations.

The Ohio legislature met in regular session in January and adjourned in March. All branches of the government were controlled by the Democrats. The outstanding act of the legislature was the passage of a law permitting women to vote for presidential electors. This law was brought to a popular referendum vote in November and rejected by a popular majority of 145,629. At the same election a prohibition amendment to the State constitution, offered by the initiative process, was rejected at the polls by a majority of 1137. The legislature granted the cities of the State some scant financial relief, but not enough to help the situation materially.

Toward the end of the year the State was seriously affected by the coal shortage, which led to a conflict between Governor Cox and the national fuel administration when the governor ordered the confiscation of coal intended for lake shipment, but which the closing of navigation had stalled on Ohio sidings. Ohio responded to the national draft without protest or disorder. Ohio National Guardsmen mobilized at Camp Sheridan, Montgomery, Ala., and the drafted men went into camp at Chillicothe, Ohio.

Legislation. Among the more important

measures passed by the legislative session of 1917 are those noted below. Several amendments were made to the laws affecting the administration of the State government. A central purchasing agency was created. Provision was made for the voting of citizens of the State absent in the national service. Women are prohibited from working over six days in the week in restaurants. Provision was made for the protection of railroad employees against arbitrary discipline or discharge. Penalties, similar to those for horse stealing, were imposed for the stealing of automobiles. The insurance laws were amended in important particulars. A committee was created to study health and old age insurance and to make recommendations as to their adoption. See PROSTITUTION.

STATE OFFICERS. Governor, James M. Cox; Lieutenant-Governor, Earl D. Bloom; Secretary of State, William D. Fulton; Treasurer, Chester E. Bryan; Auditor, Vic Douahey; Attorney-General, Joseph McGhee—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, Hugh L. Nichols; Associate Justices, Thomas A. Jones, Edward S. Matthias, James G. Johnson, Maurice H. Donahue, O. W. Newman, R. M. Wanamaker; Clerk, Frank McKean.

OHIO NORTHERN UNIVERSITY. An educational institution conducted under the auspices of the Methodist Episcopal Church, located at Ada, Ohio. In the fall of 1917 there were 1667 students and 40 members of the faculty; it is estimated that 300 students left the university to enter the service of the government in 1917 and that 5 members of the faculty were engaged in war work. There were 7500 volumes in the library. The university was founded in 1871. President, Albert Edwin Smith, D.D., Ph.D.

OHIO STATE UNIVERSITY. A co-educational State institution at Columbus, Ohio. In the fall of 1917 there were 4187 students and 481 members of the faculty. Volumes in the library numbered 187,000. Income from State and Federal governments in 1917 amounted to $1,930,075. The university was founded in 1872. President, William Oxley Thompson, LL.D.

OHIO UNIVERSITY. A co-educational State institution at Athens, Ohio. In the fall of 1917 there were 828 students, a loss of 25 per cent of the 1916 enrollment, and 87 members of the faculty, not including critic teachers, student assistants, and a few instructors giving part time service. The university receives its support from three sources—a State mill tax, legislative appropriations, and receipts from incidental fees, rents, and interest on permanent funds forming a part of the Irreducible Debt of Ohio. The latter amounts to $131,226 and the income therefrom in 1917 was $7873. Total income therefrom was $403,030. Volumes in the library numbered 48,750. A new department of advertising and salesmanship was added during the year. The university was founded in 1804. President, Alston Ellis, LL.D.

OHIO WESLEYAN UNIVERSITY. A co-educational institution under the auspices of the Methodist Episcopal Church, located at Delaware, Ohio. Some of its departments are in Cleveland. In the fall of 1917 there were 1026 students and 62 members of the faculty. Professor William E. Smyser was appointed to the newly created office of dean of the college. Productive funds in 1917 amounted to $1,150,000 and the income therefrom to $62,000. Volumes in the library numbered 67,882. The university was founded in 1844. President, John Washington Hoffman, D.D., LL.D.

OIL-SHALE. See GEOLOGY.

OKLAHOMA. POPULATION. The population of the State in 1910 was 1,637,155, and on July 1, 1917, it was estimated to be 2,289,253.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	3,900,000	33,150,000	$48,730,000
	1916	3,950,000	53,325,000	49,592,000
Wheat	..1917	3,100,000	35,650,000	69,161,000
	1916	3,050,000	29,585,000	49,407,000
Oats	1917	1,150,000	26,450,000	19,838,000
	1916	1,160,000	14,500,000	8,265,000
Potatoes	.1917	36,000	2,484,000	4,471,000
	1916	34,000	1,802,000	3,514,000
Hay	1917	575,000	*a* 920,000	14,168,000
	1916	550,000	935,000	8,415,000
Cotton	..1917	2,838,000	*b* 890,000	117,925,000
	1916	2,562,000	823,000	78,325,000

a Tons. *b* Bales of 500 pounds gross weight.

MINERAL PRODUCTION. The production of coal in Oklahoma in 1916 amounted to 3,608,011 short tons, valued at $7,525,427, a decrease of 2 per cent in quantity, but an increase of $89,521 or 1 per cent in value. The number of men employed during the year was 7800, compared with 8457 in 1915. The production was curtailed by lack of business during the earlier part of the year at a time when most of the coal fields were producing at a high rate. The demand for coal improved after September 1, but labor trouble resulted in a temporary shutting down of the mines, and on some of the railroads there was a shortage of cars.

The production of petroleum in Oklahoma in 1916 far surpassed that of any previous year, and the State continued to rank first, as an oil producer. For the second time since 1908 it surpassed California. There were produced 97,915,243 barrels, valued at $56,706,133 in 1915, compared with 107,071,715 barrels, valued at $128,463,805 in 1916, an increase in 1916 of 9 per cent in quantity and 127 per cent in value. The Oklahoma-Kansas field is estimated to have produced 147,000,000 barrels of petroleum in 1917, compared with 115,809,072 in 1916.

The value of recoverable lead and zinc in 1915 was $4,236,636, compared with $9,378,142 in 1916. The metal content of lead concentrates increased from 7306 in 1915 to 12,115 tons in 1916, and to 28,754 tons in 1917. The value increased to $1,671,870. The recoverable spelter increased from 14,314 tons, valued at $3,549,872 in 1915, to 28,754, valued at $7,706,272 in 1916.

TRANSPORTATION. The total railway mileage in the State during 1917 was 6435. The railroads having the longest mileage were: The St. Louis and San Francisco, 1498; the Chicago, Rock Island, and Pacific, 1326; the Atchison, Topeka, and Santa Fé, 982; the Missouri, Kansas, and Texas, 703. There were about fifty miles of new road constructed during the year.

FINANCE. The report of the State treasurer for the fiscal year of 1917 shows the total receipts to be $7,638,909. The expenditures were $7,186,169. There was a balance in the treasury at the beginning of the year of $1,922,780, and at the end of the year $2,373,620. The bonded debt of the State was $4,367,000.

EDUCATION. The total school population in the State in 1916 was 587,134. The total enrollment in the public schools was 514,401, with an average daily attendance of 325,032. There were 3802 male teachers and 8928 female teachers. The average monthly salary of first grade male teachers was $84.02, and of female teachers $63.05; of second grade male teachers $66.65, and of female teachers $58; of third grade teachers, $57.24, and of third grade female teachers $50.12.

CHARITIES AND CORRECTIONS. The State penal and charitable institutions include the Oklahoma State Orphans' Home at Pryor, the Confederate Soldiers' Home at Ardmore, Hospitals for the Insane at Vinita, Supply, and Norman, the School for the Blind at Muskogee, the Institute for the Feeble-Minded at Enid, the State Training School for Boys at Pauls Valley, the School for the Deaf and Dumb at Sulphur, the Industrial School for Girls at Chickasha, the Industrial School for the Deaf and Blind at Taft, the Industrial School for Colored Orphans at Taft, the Training School for Negro Boys at McAlester, the School for Wayward Incorrigible Girls at Oklahoma City, the State Penitentiary at McAlester, and the State Reformatory at Granite.

POLITICS AND GOVERNMENT. There was some trouble in the State over the enforcement of the draft in August as a result of agitation carried on in several districts. A number of men gathered to resist conscription. Most of these were tenant farmers whose hardships in this capacity had aroused sentiment against the government. These men organized several radical associations. Associated with them were a few negroes and Indians, and a number of criminals. The centre of the disturbance was in Seminole County and neighboring counties. The citizens of the State organized posses of several hundred armed men to round up the outlaws, and bring them to justice. In most cases, they surrendered without resistance. There was, however, a conflict in Holdenville, where the posse raided a country school house, in which a number of draft resisters had taken refuge. One of these was killed and two others wounded. Two members of the posse were also wounded. The greater number of the agitators surrendered within a few days. The authorities were assisted in putting down the insurrection by a number of Indians. A charge of treason was brought against the prisoners since they had waged war against the government with an armed force.

STATE OFFICERS. Governor, R. L. Williams; Lieutenant-Governor, M. E. Trapp; Secretary of State, J. L. Lyon; Treasurer, W. L. Alexander; Auditor, E. B. Howard; Adjutant-General, Ancel Earp; Attorney-General, S. P. Freeling; Commissioner of Insurance, A. L. Welch; Commissioner of Education, R. H. Wilson; Commissioner of Agriculture, F. M. Gault—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, Matthew J. Kane; Associate Justices, John B. Turner, J. F. Sharp, Summers Hardy, and Charles M. Thacker; Clerk of the Court, William M. Franklin.

OKLAHOMA, UNIVERSITY OF. A co-educational non-sectarion State institution, located at Norman, Okla. In the fall of 1917 there were 2516 students and 141 members of the faculty. Dean Stocking of the school of pharmacy resigned in 1917 and was succeeded by Howard Storm Browne. The school of commerce and industry was changed to the school of public and private business and a new school of social service was established. A school of manual training, offering a two-year course in manual training, for the preparation of teachers of manual training in high and normal schools, was established in the college of engineering. The total income for the year 1917 was $413,520. The legislature appropriated $625,000 for four new buildings—$150,000 for an auditorium; $75,000 for a wing of the library; $100,000 for a new geology building; and $200,000 for a State hospital to be under the control and direction of the school of medicine. The total value of the land endowment and proceeds from the sale of school lands is estimated at $3,670,000 and the income from land funds for 1917 was $123,000. The university was founded in 1892. President, Stratton Duluth Brooks, LL.D.

OLD AGE PENSIONS. In connection with the general movement for Social Insurance (q.v.) considerable attention has been given to the problem of old age dependency. Every advanced country except our own has some form of public old age pensions which obviate the necessity of laborers who have been honest and industrious throughout life from becoming paupers in their old age. Abroad such plans are either non-contributory as in England or contributory as they are in most other nations. Under the non-contributory principle the worker is assumed to have earned the right to a pension by faithful labor during his active and productive years. Elsewhere the contributory principle is considered necessary as a means of preserving the self-respect of labor and desirable also as an encouragement to thrift. In the United States provision of retirement pensions has been made by most civil authorities, for their own employees, but there has been no public provision for the employees of private industry. Nearly all large corporations, however, have found it economically advantageous to introduce retirement schemes whereby employees after various ages from 60 to 70 may retire on weekly or monthly payments made by the former employer. These schemes increase the loyalty of labor and raise productive powers, while at the same time reducing the losses from "labor turn-over." The American Federation of Labor and other labor union groups have strenuously objected, however, to such plans because they tie laborers to their jobs and reduce the feasibility of strikes for higher wages and better conditions.

MASSACHUSETTS. The State Commission on Social Insurance reporting in January, 1917, found opinion in the State sharply divided on the question of whether a public old age pensions scheme should be contributory or non-contributory. While organized labor was in favor of a non-contributory system, much opinion was decidedly opposed on the ground that a contributory plan would not only preserve the dignity of labor but meet the requirements of sound public finance.

In consequence of several years' agitation and repeated investigation the opinion of the State has come generally to accept the desirability of public old age pensions. In his inaugural message in January, Governor McCall said: "I am of the opinion that an annuity should be paid without contribution to deserving citizens seventy or more years of age who do not have children able to support them nor an income more than $200 a year, and who have been residents of the Commonwealth at least ten years."

The State Bureau of Statistics issued reports of an exhaustive canvass of all data relating to persons sixty-five years of age and over within the State. It was found that there were 189,047 such persons of whom 34,496 were dependent upon public or private charity to a greater or less extent. To these latter had been paid in the year ending March 31, 1915, $3,234,000 in various forms of public and private aid, but not including Federal pensions. These payments included the aid given by public correctional institutions, insane hospitals, pauper institutions, overseers of the poor, State and military aid, soldiers' relief, and private aid given by "homes" and other institutions. The total amount of public relief in that year was $2,251,000 given to 26,403 persons. Of all persons aided, 73 per cent received less than $100 each, and only 2.8 per cent received $300 or more each. While only 31 per cent of the total population of Massachusetts is foreign-born, and while only 39.4 per cent of all persons 65 years of age and over are foreign-born, of the 34,496 receiving aid over 52 per cent were foreign-born. Nevertheless 95 per cent of all persons 65 years of age and over had resided in the State at least 10 years, and about 80 per cent of those receiving aid in 1915 had resided in the State for at least 30 years. Two-thirds of the dependent aged women were widows, and one-third of the aged male dependents were widowers.

GREAT BRITAIN. Owing to the high cost of living, especially the high prices of food (see PRICES) the British Government late in 1916 awarded additional allowances to old age pensioners for the period of the war. These allowances were restricted to cases of special hardships and to pensioners whose total income, including pension, did not exceed $3.04 per week. In no case may the additional allowance exceed 60.8 cents (2*s.* 6*d.*); and in no case may the total income of a pensioner receiving the addition exceed $3.16 per week. If the pensioner is one of a married couple living together and their joint means do not exceed $4.74 per week their income may be raised to $4.87 per week by an additional allowance, but no such allowance may exceed 60.8 cents per week. Moreover no additional allowance may be paid to pensioners already in receipt of the full old-age pension of $1.22 (5*s.*) per week. Considerable discretion is given to local pension committees in determining allowances.

OLNEY, RICHARD. An American statesman, died in Boston, April 8, 1917. He was born at Oxford, Mass., September 15, 1835. After graduating A.M. from Brown University in 1856, he attended Harvard Law School, and was admitted to the Boston bar in 1859. Mr. Olney early distinguished himself in his profession, as a specialist in probate, trust, and corporation law. For one year, 1874, he served in the Massachusetts House of Representatives, but he was not known to the country at large, nor even to leading politicians in Washington when he was appointed attorney-general in President Cleveland's cabinet in 1893. For some time he had been a warm friend of Mr. Cleveland, who was a man of similar type and tastes. It was on Olney's advice that the president called out Federal troops to put down the Debs railroad strike in Chicago, and the attorney-general successfully defended the action as a measure justified by the Constitution to prevent interference with the mails and interstate commerce. The case was of far-reaching importance. Mr. Olney was not, as some supposed, hostile to labor, as was shown when he upheld the right to organize. At the end of an examination of labor conditions, made for the government, he indorsed the principles of mediation and arbitration in disputes, and drafted the bill relating to labor that was passed by the House in February, 1895. In June, 1895, Mr. Olney was transferred to the post of secretary of state, which he continued to hold until the end of the term, March 4, 1897. During this short period he made a notable record, especially in his treatment of the boundary dispute between Great Britain and Venezuela. Supported by Cleveland, he insisted on the arbitration of the entire controversy, and at the risk of bringing on war, upheld the Monroe Doctrine. He remained firm even after Lord Salisbury, the British prime minister, had refused to submit to the American demand, and eventually accomplished his purpose. He also collected from Spain the Mora claim, which had long remained unsettled. President Wilson offered to Mr. Olney the ambassadorship to Great Britain in 1913, but he felt obliged to decline this honor, as well as the tender of the governorship of the Federal Reserve Board, in 1914. He did, however, become a member of the International Commission under the treaty between France and the United States in 1915. He served as a regent of the Smithsonian Institution from 1900 to 1908, and received honorary degrees from Harvard, Brown, and Yale.

OMAN. An independent Mohammedan state in southeastern Arabia. Estimated area, 82,000 square miles; estimated population, 500,000. The capital is Muscat; its population, including that of the adjacent Muttra, is about 25,000. Imports in 1915-16, 3,644,912 rupees, and exports, 2,822,829 rupees; in 1913-14, 6,116,520 rupees and 4,073,044 rupees. Chief imports in 1915-16: rice, 1,241,475 rupees; piece goods, 672,097; coffee, 519,758; twist and yarn, 104,749, etc. Chief exports: dates, 1,533,799 rupees; fish, 138,295; cotton goods 222,700; limes, 66,633. These figures are only for sea-borne trade; in addition, there is a large unrecorded caravan trade with the interior. Reigning sultan, Seyyid Timar bin Faisal, who was born in 1886 and succeeded his father, Seyyid Faisal bin Turki, October 5, 1913. British consul and political agent in 1917, Major E. B. Howell.

ONTARIO. The second largest province of Canada. It extends from Quebec (which is the largest province) westward to Manitoba; on the north it is bordered by Hudson and James bays, and the greater part of its southern limits is marked by lakes Ontario and Erie, Georgian Bay, and lakes Huron and Superior. Capital, Toronto, the second largest city of the Dominion. The area is estimated at 407,262 square miles, of which 41,382 water; the land area of the province is a little larger than the combined land area of Oregon, California, and Arizona. Ontario is the most populous of the Canadian provinces; the number of inhabitants was 2,523,274 at the 1911 census, the increase over 1901 being 15.58 per cent. Estimated population of Toronto in 1915, 470,000 (as compared with 376,538 at the 1911 census); Ottawa, capital of the Dominion, 102,000 (87,062); Hamilton, 101,000 (81,969); London, 56,000 (46,300).

The provincial government is administered by a lieutenant-governor, appointed for five years by the governor-general of Canada; he acts through an executive council, or responsible ministry. The legislative power is exercised by a unicameral assembly of 111 members elected for four years. In 1917 the suffrage was extended to women in provincial and municipal elections. In the House of Commons of the 13th Canadian Parliament, elected December 17, 1917, Ontario is represented by eighty-two members. The lieutenant-governor in 1917 was Col. Sir John Strathearn Hendrie, appointed September 26, 1914, to succeed Col. Sir John Morison Gibson. Premier, Sir William Howard Hearst, K.C.M.G. See CANADA.

OPERA. See MUSIC.

OPIUM. The ten-year agreement between Great Britain and China in regard to the importation of opium expired in March, 1917, and Dr. Wu Lien Teh at the National Medical Congress in Canton, China, said that the year would be historic because of the banishment of opium, the curse of China for seventy-five years. But a still more serious condition of affairs was developing from the substitution of morphin for opium. In the provinces of Manchuria and Shantung the ravages of the drug were alarming. Criminals and beggars as well as poor people consumed large quantities, mostly by hyperdermic injection. In 1911 it is said that Great Britain alone furnished five and a half tons of morphin; in 1914, 14 tons, and in 1916 over 16 tons. The morphin habit was first introduced by emigrants from Swatow, and is increasing rapidly. The drug is distributed in small packages under various fanciful names.

OPTOCHIN. A synthetic derivative of cupreine, an alkaloid extracted, together with quinine, from the bark of *Remijia pedunculata*. The substance is known chemically as ethylhydrocupreine, its formula being $C_{19}H_{22}N_2OH.C.C_2H_5$. Optochin has the anesthetic and antimalarial properties of quinine and in addition has a specific bactericidal effect on the pneumococcus, and is therefore used with good effect in the treatment of ulcus serpens, a pneumococcus infection of the cornea of the eye. The drug is uncertain in its action and dangerous when given internally, relatively small doses having produced deafness and blindness, sometimes transient, sometimes permanent. Optochin occurs as a white or yellowish, odorless powder, having a bitter taste, and is nearly insoluble in water. .For use in the eyes it must be prepared in an ointment or solution in bland oil.

Optochin hydrochloride has the same actions and uses as those of optochin, but is soluble in two parts of water and may therefore be dropped into the eye in a watery solution. A strength of from 1 to 2 per cent is recommended.

ORANGE FREE STATE. A province of the Union of South Africa since the formation of the Union, May 31, 1910. The capital is Bloemfontein, which had at the last census 26,925 inhabitants, of whom 14,720 white. See SOUTH AFRICA, UNION OF.

ORE-DEPOSITS. See GEOLOGY; MINERALOGY.

OREGON. POPULATION. The population of the State in 1910 was 672,765, and on July 1, 1917, it was estimated to be 861,992.

AGRICULTURE. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. bu.*	*Value*
Corn	1917	42,000	1,260,000	$1,890,000
	1916	40,000	1,240,000	1,273,000
Wheat ...	1917	821,000	12,811,000	23,316,000
	1916	850,000	19,550,000	28,347,000
Oats	1917	365,000	9,125,000	6,844,000
	1916	360,000	17,280,000	8,467,000
Potatoes .	1917	75,000	8,100,000	6,480,000
	1916	55,000	8,250,000	7,425,000
Hay	1917	840,000	*a* 1,638,000	28,665,000
	1916	850,000	1,955,000	21,810,000

a Tons.

MINERAL PRODUCTION. The total output of gold in the State in 1915 was valued at $1,861,796, compared with a value of $1,902,179 in 1916. The silver production in 1916 was 231,342 ounces valued at $152,223, an increase of 113,395 ounces in quantity, and $92,424 in value. The copper output in 1915 was 451,172 pounds, compared with 3,581,886 pounds in 1916. There were produced in 1915 62,957 pounds of lead, compared with 28,000 in 1916.

The preliminary estimates of the value of the metals mined in the State in 1917 showed a material decrease from 1916. The output of gold in 1916 was $1,902,179, and for 1917, $1,466,419. The output of silver in 1916 was 231,342 ounces, and in 1917, 115,697. The copper output of 1916 was 3,581,886 pounds, and in 1917, 1,508,639 ounces. The lead output was 28,000 pounds in 1916, but no production of this metal had been reported for 1917.

There are about 100 productive mines in the State, and although two-thirds of them are placer mines, the larger part of the output of gold comes from the deep mines, and of course, all the output of the other metals. There were no important discoveries in any of the mining districts of Oregon in 1917.

TRANSPORTATION. The total mileage of main line in the State in June, 1916, was 2860. The roads having the longest mileage were: The Oregon and Washington Railroad and Navigation Company, 967; the Oregon and California, 680; the Southern Pacific, 356.

FINANCE. The total receipts for the two years ending September 30, 1916, amounted to $12,044,354, and the disbursements to $11,473,469. There was cash on hand on October 1, 1914, to the amount of $567,917, and on September 30, 1916, of $1,138,802. There was no State debt.

EDUCATION. The total school population in the State in 1917 was 205,417. The total enrollment was 141,333, with the average daily attendance of 104,740. The number of female teachers was 4894, and the number of male teachers was 1116. The average monthly salary of male teachers was $80.62, and that of female teachers was $65.75. The total expenditure for school purposes was $7,874,853.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include the Oregon State Hospital at Salem, the Eastern Oregon State Hospital at Pendleton, the Oregon State Penitentiary at Salem, the Institute for the Feeble-Minded, Oregon State Training School, Oregon State Tuberculosis Hospital, Oregon State School for the Blind, Oregon State School for the Deaf, the Oregon State Industrial School for Girls, all at Salem, and the Oregon State Soldiers' Home at Roseburg.

POLITICS AND GOVERNMENT. The legislature, at the request of Secretary Lansing, withdrew the anti-alien bills then before it. These bills were to prevent Japanese from owning land in the State. The secretary's action was taken following the protest on the part of the Japanese Ambassador. Governor Withycombe, on February 2, signed the prohibition bill passed by the legislature forbidding the importation of liquor into the State.

LEGISLATION. Among the more important measures passed at the legislative session of 1917 are those noted below. An act was passed creating in the courts of each justice of the peace a small claims department with jurisdiction over amounts not exceeding $20. This is the so-called "poor man's court." The Supreme Court was authorized to appoint a commission on law reform with members to serve without pay, to report to the next legislature. A measure was enacted making failure to respond to the governor's draft punishable by a military tribunal. A moratorium for the payment of mortgages and judgments for men in the military service was provided for. It was made a misdemeanor willfully to communicate orally or in writing, any statement concerning a discharged or pardoned convict, which might deprive him of employment or extort money from him. Murderers were exempted from the benefits of the indeterminate sentence law.

An amendment to the State constitution was proposed declaring it the function of the constitution to define a plan of government "every provision of which is consistent and harmonious with every other provision thereof, and to perpetuate such consistency and harmony, any and all amendments of this constitution shall be so worded that their adoption by the people will leave the amended constitution without any conflicting provisions." A proposed amendment adds, "and as a vital consideration in construing any amendment in the effect of the amendment upon the entire constitution, no amendment shall have the effect of rendering any other part or parts of the constitution ineffective without expressly repealing such other part or parts.

Provision was made for an investigation of all State departments by representative business men. Provision was made, also, for a State rural credit system. Measures were passed providing that primary ballots are to be printed with the names of the candidates in as many different rotations as there are candidates, thus placing each name at the top of the list on practically an equal number of ballots. Several amendments were made to the prohibition laws of the State. Women employed in the care and preparation of foods are partially exempted from the operation of the eight-hour law. A council was appointed to consider making workingmen's compensation compulsory and self-supporting. Measures prohibiting untrue, deceptive, or misleading advertisements were passed. Laws relating to insurance were amended in important details. There were several important acts relating to conservation, and provision made for the formation and regulation of irrigation districts. The taxation laws were amended. Measures providing for the commitment and care of the feeble-minded or criminally inclined persons were passed. Segregation of the feeble-minded and insane by removal from other institutions was provided for. Amendments were made to the banking laws of the State. The establishment of parental schools for the discipline and instruction of habitual truants, absentees, or school offenders was authorized. Provisions were made for the establishment of county tuberculosis sanatoriums and hospitals. Other important amendments were made to the laws governing the administration of hospitals.

STATE OFFICERS. Governor, James Withycombe, Rep.; Auditor and Secretary of State, Ben W. Olcott, Rep.; State Treasurer, Thomas B. Kay, Rep.; Superintendent of Public Instruction, J. A. Churchill, Rep.; Acting Adjutant-General, John M. Williams; Attorney-General, Geo. M. Brown, Rep.; Commissioner of Insurance, Harvey Wells.

JUDICIARY. Supreme Court: Chief Justice, Thos. A. McBride; Justices, Wallace McCamant, Frank A. Moore, Henry J. Bean, George H. Burnett, Lawrence T. Harris, and Henry L. Benson; Clerk, J. C. Moreland.

OREGON, UNIVERSITY OF. A co-educational State institution located at Eugene, Ore., with the medical school in Portland. In the fall of 1917 there were 1903 students in all departments and 140 members of the faculty. Compulsory military drill was established in 1917, five hours weekly being required in addition to three hours' work in a required lecture course in military science. Col. John Leader, late of the British army, was made professor of military science. Dr. John Landsbury was made dean of the school of music to succeed Professor R. H. Lyman. Volumes in the library numbered 75,000. Productive funds amounted to $55,000 and the income therefrom to $2200. The university was founded in 1876. President, Prince L. Campbell, LL.D.

ORGANIC CHEMISTRY. See CHEMISTRY.

ORNITHOLOGY. Bird study received the usual amount of attention during the year, both from an economic and from the bird lover point of view. As has been stated in earlier YEAR BOOKS, the economic relations between birds and insects had not received as much attention in Europe as in the United States, but Collinge especially had urged upon the British public the necessity for more economic bird study. He stated that in the absence of official information, there was not much data to be had on the question of the influence of birds on agriculture, but gave as his personal opinion that the wood pigeon was most destructive to agriculture in England, with the rook, the starling, the bullfinch, and the blackbird nearly as bad. In his opinion, there was urgent need in England for some remedies for this condition. The importation of feathers into England was prohibited for the duration of the war and it was hoped that this might be made permanent, as otherwise stocks would be accumulated until the time when the prohibition would be removed, and this would nullify the efforts made at protection. A report that on account of gunfire in Europe the usual number of migratory birds had not appeared in England was investigated by a correspondent of *Nature*, who reported that there was no indication that this had happened.

Dunlop described cases of polygamy in rooks, where in some cases two females sat side by side in the same nest and were fed by the male, who also fed the young when they hatched. In other cases the females had different nests, but were fed by the same male. It was reported that Kolb's Vulture had entirely disappeared from Humansdorp, Cape Province, South Africa, apparently having been exterminated by feeding on cattle which died of rinderpest.

Cornell University recently acquired a passenger pigeon which was killed in 1909 at Clyde, N. Y. Bartsch recorded a story told by a hunter in Arkansas that in 1879 a fire swept over a roosting place of the passenger pigeons and practically exterminated the flock. Since this time no more had been seen in that locality. The starling was spreading over the United States, and promised to be a troublesome pest. A winter nesting place at "Aldie" near Doylestown, Pa., was estimated to contain over 1,000,000 birds. The first bird reservation east of the Mississippi area was opened in 1916 at Sieur de Monts on Mt. Desert Island, Maine. This lies near the border of the Canadian faunal limit, and because of its location is an important station in the spring and fall migrations. The American Ornithologists Union held its 35th annual meeting at Cambridge, Mass., from November 12 to 16. John H. Sage, of Portland, Conn., and Dr. T. S. Palmer, of Washington, D. C., were elected president and secretary respectively. See ZOÖLOGY.

OSTERHAUS, PETER JOSEPH. An American soldier, died in Berlin, Germany, January 4, 1917. Born at Coblenz on the Rhine in 1823, and early an officer in the Prussian army, he came to the United States in 1849, after the failure of the popular uprising, with Carl Schurz, Abraham Jacobi, and others who became famous. At the beginning of the Civil War, resident in St. Louis, he became major of the 2d Missouri Rifle Battalion, which he commanded at Boonville and Wilson's Creek. Promoted brigadier general in 1862, he was placed in command of the 9th Division of the 13th Army Corps, and participated in the battles of Campaign Hills, Fort Gibson, and Black River Bridge, where he received severe wounds. At the battle of Big Black River he prevented Gen. Johnston from raising the siege of Vicksburg, thus contributing to the Confederate general's collapse and surrender to Grant. Later Gen. Osterhaus was with Sherman in the Jackson, Miss., campaign, and with Grant before Chattanooga, and after taking part in the battles of Lookout Mountain and Missionary Ridge, he became major general of volunteers (1864). He held various assignments thereafter, being commandant of the Military Department of Mississippi when mustered out in 1866. For a year immediately after the war he served as United States consul at Lyons, France, and then settled in Germany, at Duisburg. In 1905 he was placed on the retired list as brigadier general, U. S. A., and in 1916 was promoted major-general, retired. His son, Hugo Osterhaus, became rear admiral in the United States navy.

OTIS, HARRISON GRAY. An American newspaper owner and soldier, born near Marietta, Ohio, on January 10, 1837, died July 30, 1917. He worked during the early years of his life as a printer and was a delegate to the Republican National Convention in 1860, which nominated Lincoln for the presidency. At the outbreak of the Civil War he enlisted as a private in the Twelfth Ohio Volunteer Infantry. He was brevetted lieutenant colonel in 1865. He was brevetted major general in 1899 on account of meritorious service in the Philippines during the Spanish-American War. From 1867 to 1870 he was employed in the government printing office and became chief of one of the divisions. He acted as a newspaper correspondent and was the editor of the *Grand Army Journal*. In July, 1882, he purchased an interest in the Los Angeles Daily *Times* and the *Weekly Mirror*. The former paper became widely known for its bitter opposition to organized labor. Inspired by a feeling of revenge a group of union labor men dynamited the *Times* plant in 1910 and wrecked the building and killed twenty-one employees. The McNamara brothers confessed their share in the crime in 1911. For a history of the case consult the articles on California and Trade Unions in the NEW INTERNATIONAL YEAR BOOK for 1911.

PAHANG. A state (the easternmost) of the Federated Malay States (q.v.).

PAINTING AND SCULPTURE. The year 1917, the fourth of the great war, was marked by an increased lack of artistic production outside of the United States, and a corresponding scarcity of foreign art in this country. The customary official exhibitions were held as usual in Paris and London, and many of the paintings were military in subject. Stirring war posters, lithographs, and cartoons from France and Great Britain were exhibited in New York. The important art schools abroad were much depleted in the number of male students, and many young artists were killed in action, an unrecoverable loss. In France and Italy the stress of modern warfare has desolated precious historical edifices, churches, chateaux, cathedrals.

The necrology list for the year included, among Americans, the veteran painter, Albert Ryder; the portraitist, Carroll Beckwith; the decorative artist, Howard C. Cushing; the landscape painter, Jules Turcas; and the well-known painter of sheep, John A. Monks; the sculptors, Sir Moses Ezekiel, long resident in Rome, John J. Boyle, and Bela L. Pratt; the illustrators, Albert B. Wenzell and Philip Boileau. Mention should be made of the death of William MacBeth, a pioneer among art dealers of American paintings. France mourned the loss of Auguste Rodin (q.v.), her greatest and most influential sculptor; the versatile painter, Carolus-Duran, and Edgar H. G. Degas, one of the foremost impressionists. Charles Napier Henry, the noted English marine painter, and Matthew Maris, the Dutch painter, who had lived most of his life in London, conclude the list.

ARCHITECTURAL LEAGUE EXHIBIT. This exhibition, the first of the season, is held early in January. The honor medal for painting went to Maxfield Parrish, that for sculpture to Hermon MacNeil. The imposing Temple of the

Scottish Rite, designed by Russell Pope and erected in Washington, won him the architectural medal. Characteristic pieces of sculpture were offered by Daniel Chester French, Evelyn Longman, John Gregory, and others. Especially ambitious were the mural decorations, including the huge canvas "Columbine" by Arthur Crisp, a stage set showing eastern influences with exotic and brilliant color by Hugo Ballin, and some decorative work by the late Howard C. Cushing. Other notable exhibitors were Robert Ryland, E. Benda, Louis Valliant, J. Mortimer Lichtenauer, and Edith Magonigle. The American Academy at Rome added to the general interest, if not excitement, its usual quota of careful, sincere, and efficient work. To the student of architecture many interesting plans and problems were offered in a somewhat unobtrusive manner.

PENNSYLVANIA ACADEMY. The one hundred and twelfth exhibition of the Pennsylvania Academy at Philadelphia presented its usual interesting aspect of paintings of those artists already weighed in the balance and not found wanting. Few new names appeared. To George Bellows, for his vibrant if slightly chaotic "Day in June," went the Temple Gold Medal and Stotesbury Prize. "Sarset," a sensitive and interesting portrait study by Arthur B. Carles, received the Walter Lippincott Prize, and the Carol H. Beck gold medal was carried off by Joseph Pearson's quaint and decorative but rather wooden double portrait, "The Twins, Virginia and Jane." A goodly number of portraits of widely varying interest invited attention. Beginning with four tempered and serious efforts by the late Thomas Eakins, the unusually representative list included examples by the late Wm. M. Chase, J. S. Sargent, Leopold Seyffert, Robert Henri, John McClure Hamilton. Especially noteworthy were a sturdy "Portrait of a Judge," by George Bellows, a sensitively rendered "Portrait in Blue." by Edmund Greacen, an ambitious group by Kenneth Frazier, and a richly brilliant effort by Hugh Breckenridge. Figure compositions which call for special mention were the glowing and sun-warmed nudes of Childe Hassam, the melancholy "Beggar" by Sidney Dickinson, a sympathetic "Mother and Child" by Marie Page; the "Woman and Macaws," vibrantly colorful, by George Luks; "Courtship" by James Hopkinson; "Europa," a little composition of classic reminiscence, by Everett L. Bryant, and characteristic studies of New York's east side by Eugene Higgins. Among the landscapes exhibited were agreeable and satisfying examples by Gardner Symons, Edward Redfield, Charles Rosen, Walter Griffin, Emil Carlsen, Willard Metcalfe, and other artists of established reputations. Special mention should be made of Hayley Lever's "Morning in the Harbor," with a somewhat too insistent foreground, which was awarded the Jennie Sesnan Gold Medal; Nancy Ferguson's "New England Street." Martha Walter's "Breezy Day," painted with amazing swiftness and sureness, the color almost floating off the canvas, and two enjoyable little paintings by Paul King and Ross E. Moffat.

NATIONAL ACADEMY, SPRING EXHIBITION. The usual and expected aspect of an academy exhibition was not wanting the past spring. Generally speaking, the walls presented an interesting if somewhat monotonous aspect. The lack of crowding gave comfort, and a rather unusual number of interesting and ambitious figure compositions invited inspection. Varying phases were observable, such as the attenuated "Improvisation," by Alden Weir, presenting a much fretted pigment surface; "Unrest," by Sidney Dickinson, winner of the third Hallgarten Prize, portraying a nude young girl with a pallid skin of ivory hardness against heavily hanging red draperies; Charles Hawthorne's "Lovers" static and impressive; a typical Richard Miller, of lovely, vaporous color; an ambitious Frieseke, "Breakfast in the Garden," fresh and blooming, but skin deep; and a vigorous and skilfull "Nude," by Leopold Seyffert. There were also the usual Indian compositions, by Irving Couse, E. Blumenschein, and others. An unusually good portrait, claiming more than cursory attention, was that of the sculptor, Bela Pratt, by Howard E. Smith, which was awarded the first Hallgarten Prize. Subdued and melancholy in color, it gained impressiveness by the simple and forceful characterization. A breezy representation of a "Young Lady in Pink," by Louis Betts occupied the place of honor in the Vanderbilt Room, with a study in browns, the portrait of a young woman by Irving Wiles, not far away. Other notable portraits were by Douglas Volk, Ben Ali Haggin, Lydia Field Emmet, DeWitt Lockman, Kenyon Cox, Henry Salem Hubbell, Albert Herter, Edward Dufner, Mary Fairchild Low, and Joel Levitt. A "Young Woman" in sombre garments, by Adolphe Borie, received the Maynard Prize; the flamboyant and arresting "Children of the Sands," vivid in color, somewhat original in composition, was awarded the Thomas B. Clarke Prize. A life-size portrait of the dancer, Jeanne Cartier, by Luis Mora, showed bright and daring color.

Among the landscapes the first Altman Prize went to Charles H. Davis for "Call of the West Wind," embodying all sound and conservative principles of the American school; the second to Ben Foster's "Late Summer Moonrise," characteristic of this artist's sincere and well-composed work. John Folinsbee received the third Hallgarten prize for his "Canal in Winter," well designed and cheerfully executed. Of unusual composition, impressive and convincing, was Charles H. Chapman's "In the Deep Woods," awarded the Saltus Medal, and afterwards acquired by the Metropolitan Museum of Art. The Inness medal went to Ernest Lawson's "Hills at Inwood," perhaps not quite as sensitively satisfying a work as is usual with this artist. Not very representative were the forty-four pieces of sculpture exhibited. The portrait busts of J. Francis Murphy by Scarpitta Cartaino, J. Carroll Beckwith by George T. Brewster, Charles McKim, an excellent characterization, by Albin Polasek, and Jacob H. Schiff by Victor Brenner, might be noted. A novel feature was the exhibition of one hundred miniatures by members of the American Society of Miniature Painters.

CHICAGO ART INSTITUTE. The thirtieth annual exhibition of contemporary American painting and sculpture, held in November, presented an eminently conservative appearance, giving the impression of general meritoriousness and sincerity of individual effort. The Potter Palmer prize of $1000 went to Ernest Blumenschein for "The Chief Speaks," painted in this artist's well-known manner, serious and convincing. Other prize winners were Guy Wiggins' "Lightly Falling Snow," afterwards purchased for the Institute Collection, and Charles Reiffel's "In the Hills."

The works of artists familiar through other exhibitions, including prize winners such as Max Bohm's "Children of the Sand," and Arthur Davies's "Castalias," were in evidence. Characteristic paintings by such well-known artists as Emil Carlsen, Rosen, Redfield, Smedley, Frieseke, Gifford Beal, Childe Hassam, Kronberg, and Leon Kroll, brought to the beholder renewed enjoyment and appreciation. Three Chicago artists, Ralph Clarkson, the portraitist, Frederick Grant, and James Hopkinson, contributed examples of their art, which added to the general interest. Included in the sculpture exhibit was Albin Polasek's portrait of Charles Hawthorne, awarded the Logan medal and prize.

National Academy, Winter Exhibition. Fewer paintings than usual were exhibited this year, some three hundred in all. Of special interest was the increased number of large figure compositions; such as the impressive "Somewhere in Arizona," a group of Indians, bright in color and interesting in composition, by Luis Mora; the already familiar "Twins," and a decorative landscape with wild geese by Joseph Pearson, Jr.; "Crossing the Bar," by Max Bohm, colorful and tense in action; "The Canoeists," two forceful young people in reposeful attitudes on a hillside, by William Cottan; William Paxton's "The One in Yellow," of enamel-like finish and obtrusive color, and an oddly wooden "Equestrian Portrait," by Kenneth Frazier. Charming bits of child life were "Woman and Child," by Marie Page and "Sleepy Child," by Martha Walters. The first Altman Prize went to Daniel Garber for "Boys," a group of three young men in attitudes of studied simplicity; the second to the large and ambitious portrait group of "A Mother and Five Sons," with passages of delicious color, by Karl Anderson. The Isidor Medal was awarded to Alice Stoddard's charmingly fresh "Child of Monhegan." An uninteresting portrait of a little boy by Wm. J. Whittemore won him the Proctor Prize. J. S. Sargent's recent portrait of John G. Rockefeller, suave and characteristic, occupied the place of honor in the Vanderbilt Room. Other noteworthy works were "Twilight," a wonderfully spiritual and lovely colored female figure by Charles Hawthorne; "Padre," by George Bellows, a spirited female portrait by Leon Kroll, and Fritz Kreisler, by Leopold Seyffert. Paintings of southwestern Indian life were contributed by Walter Ufer, Mathias Sandor, Irving Couse, and E. Blumenschein.

The usual number of landscapes by artists of established reputations contributed their share towards making a general impression of efficiency. There was also a sprinkling of the unusual, such as the brilliantly glowing "Lake," by Hugh Breckenridge. Edward Redfield's characteristic "River in Winter" was awarded the Carnegie Prize. Two marines, "In the Caribbean" and "Foaming Crests," by Frederick Waugh, "The Island," by Charles Rosen, the "Millstream," by Jonas Lie, and "Westchester Hillside," by Ernest Lawson, deserve especial mention. Other artists represented were Henry B. Snell, Childe Hassam, Paul King, Colin Campbell Cooper, Ben Foster, Hugo Ballin, Anne Goldthwaite, Bruce Crane, Charles Woodbury, Everett Warner, Helen Turner, Carl Rungius, Ivan Olinsky, Philip Hale, F. Frieseke, Howard R. Butler, and Jane Petersen, a widely varied list.

The fifty-six examples of sculpture exhibited constituted an interesting and stimulating little collection. Many of the pieces showed the archæological influences, radiating from the American School at Rome, which have lately become so popular in American sculpture. No more unfinished blocks of marble, with corrugated surfaces—on the contrary, so polished and smoothed down have they become that many might serve as mirrors. Paul Manship sent in his well-known and delightful "Dancer and Gazelles," awarded the Helen Foster Barnett Prize, and "Indian and Antelope," a large group of robust strength, both in his familiar archaistic style. Classic in style, of a serene and stately beauty, was the delicately treated "Unfinished Figure" by Sherry Fry, which was awarded the Watrous Medal. The realistic phase was well represented by Robert Aitken's "Une Trouvaille," a tastefully tinted group, and Malvina Hoffman's joyous "Russian Bacchanale," which received the Shaw Memorial Prize. Imaginative and sensitively modeled little statuettes by Winifred Ward, small single figures by Louise Allen, Attilio Piccirilli, Edward F. Sanford, and M. Apel, a little group, "Mother and Children," by Isidore Konti, and two charming pieces by Chester Beach, "The Wave," and "Beyond," were of special interest. Included among the portrait busts were characteristic examples by A. H. Atkins, Leon Droucker, C. S. Pietro, Giulio Novani, and Charles Grafly, the latter a striking characterization of Paul W. Bartlett.

Other Exhibitions. Memorial exhibitions of W. M. Chase, and Thomas Eakins in the Metropolitan Museum of Art, New York, of John W. Alexander in Cincinnati, John J. Enneking in the Boston Art Club, and of Howard C. Cushing in various western museums, were held during the year. That of Thomas Eakins was of especial interest, revealing to many for the first time the importance of this sincere and earnest realist. An exhibition of many recent and some early works of the popular Spanish painter, Ignacio Zuloaga, was held in Brooklyn, N. Y., Boston, Buffalo, Chicago, Pittsburg, and other western art centres. A very interesting and important exhibition of early American painting, with many paintings in private possession never before exhibited, was held in the Brooklyn Museum in February. During the late winter appeared the Retrospective Inness Exhibition at the Ainslie Galleries, in which the master's development could be traced from the earliest panoramic effects under the influence of the Hudson River School to his last style of evanescent color and dreamy sentiment. The first exhibition of the Society of Independent Artists was held in April in the Grand Central Palace, New York. A novel feature was the absence of a jury and of awards. On payment of a small fee any applicant became a member and was allowed two exhibits. The result was a hitherto unknown diversity of material shown, ranging from the most rigid academic productions to the wildest and most fantastic Cubist and Symbolist efforts. Over 1700 paintings were thus hung, with no arrangement except the alphabetical order—a truly bewildering affair.

Many "group" exhibitions, including those of

Modernists, Post Impressionists, Symbolists, Vorticists, were on view at the smaller galleries. Some of these were amusing in their display of widely different tendencies on the same walls. A Willard Metcalfe or a Dewing, for example, hung in juxtaposition with an abstract effort by Max Weber or a synthetic Jules Pascin, afforded contrasts of sufficient variety to satisfy the most jaded beholder.

In spite of wartime difficulties modern French art continued to be exhibited. Most noteworthy were the Renoir and Cézanne exhibitions. The latter, held at the Arden Galleries, and composed entirely of loans, offered a unique opportunity to study this pioneer of Post Impressionism.

Under the auspices of various war charities important loan collections were held. Most important was that of Italian Primitives at the Kleinberger Galleries, New York, in December, the largest and most representative ever held in America. An exhibition of sculpture at the Ritz Carlton, New York, under the auspices of the Allies of Sculpture, showed such wide diversity as the classic ideals of Herbert Adams, the purely American inspiration of Daniel Chester French, to the modern sensationalism of Brancusi.

The international art exhibition at Carnegie Institute, Pittsburgh, and the exhibition of contemporary American painting at the Corcoran Art Gallery, Washington, were omitted this year.

Museums. A noteworthy feature of museum activities during the past year was the great increase of educational work along art lines. Especially was this in evidence in the many museums of the Middle West, in which traveling exhibitions of many groups of selected artists' works were continually held. In the Metropolitan Museum of Art, New York, a new Department of Prints was organized, and a new wing, devoted to classical art, was opened. This beautiful addition to the museum, constructed according to the most approved modern requirements, consists of a main hall containing the principal pieces of sculpture, with adjoining side rooms devoted to the decorative arts, arranged in chronological order. The most important accession of the year was the donation of Mr. J. P. Morgan of an important part of the original famous Morgan Collection. It comprised certain paintings, examples of French Rococo sculpture, many objects of decorative art, principally of the French Gothic and Rococo periods, and a fine collection of Byzantine and Gothic enamels and ivories. Other accessions included the Whistler's portrait of Wm. A. Chase; a large portrait by Anders Zorn and "The Abbé," by Van Dyck, both the gift of Mrs. Edward R. Bacon. The Worcester Art Museum acquired Thomas Gainsborough's portrait of his two daughters; the valuable "Pembroke" Mantegna, "Judith with the Head of Holofernes," which had been sold to an American collector, and the "Girl with Turkeys," a beautiful example of the American painter, George Fuller. The Boston Museum was enriched by the gift of the important Quincy Shaw Collection of Millet's, comprising over twenty oil paintings and a like number of pastels. The "Oyster Gatherers," by J. S. Sargent, was acquired by the Corcoran Art Gallery. On November 24 occurred the dedication of the new Santa Fé (New Mexico) Museum, tastefully built in the Pueblo Indian style and devoted especially to local antiquities.

But the most important event in the art chronicle of the year was the bequest of the collection of that rare and discriminating connoisseur, the late John G. Johnson, to the city of Philadelphia. Its most distinctive feature is the collection of priceless Italian and Flemish primitives, but there are also invaluable Dutch genre and landscape paintings, a number of old English masters, some Flemish of the 17th century, and modern masters of all schools.

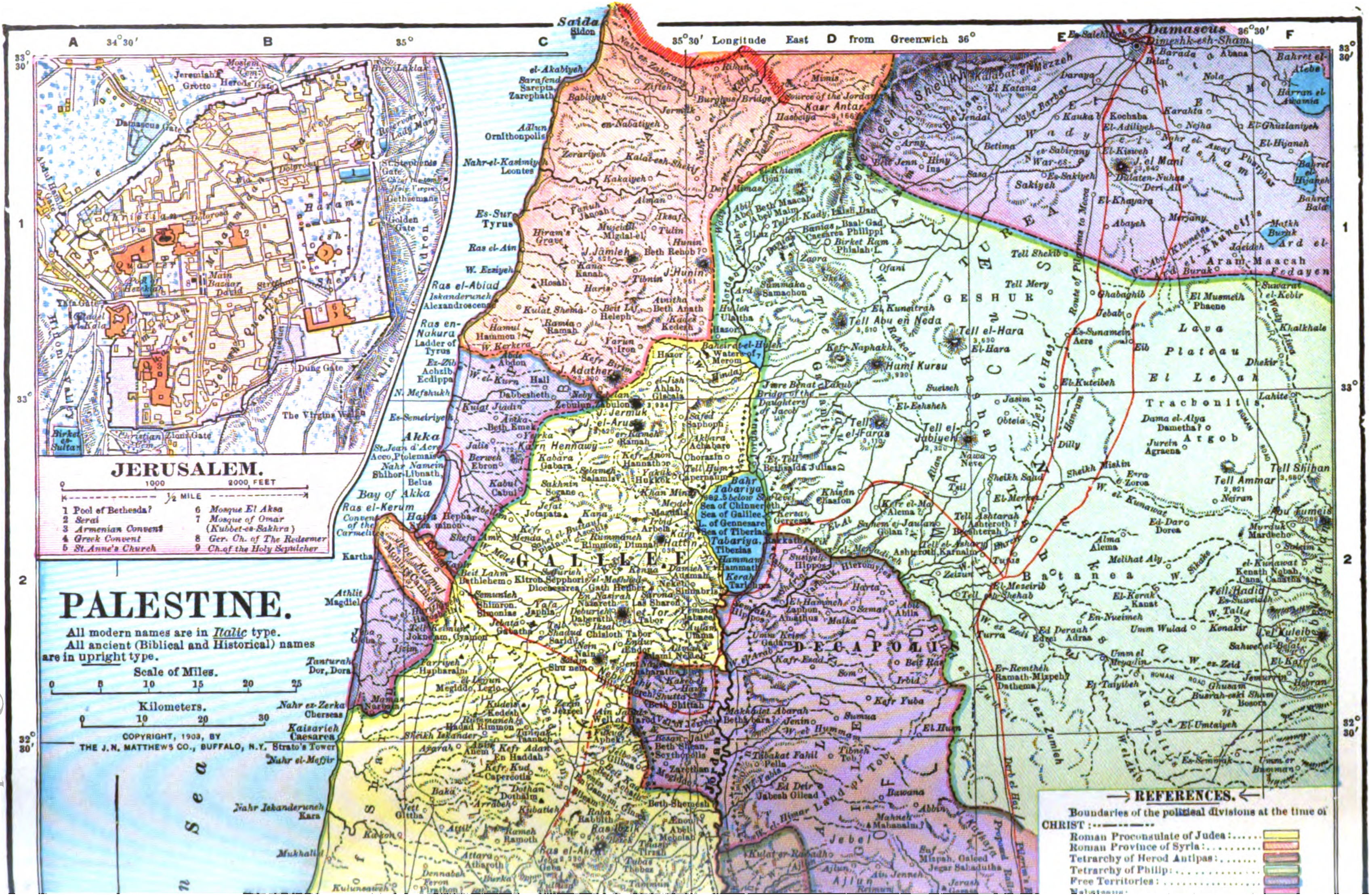
Sales. A very important collection of American paintings belonging to Dr. A. P. Humphreys, president of Stevens Institute, Hoboken, was dispersed at auction. Other American collections sold included that of the late J. F. (Diamond Jim) Brady, and the late H. W. Ranger, the latter consisting mostly of American paintings. A second sale of early Italian art objects belonging to Professor Volpi's collection took place. Important sales held in London were those of the Earl of Pembroke's collection of old masters, the famous "Hope" Collection and the important Lawton Buns collection of old masters. A number of these valuable paintings were acquired by American art dealers and private collectors. One of the "Denbigh" Van Dycks, exhibited in New York last year, was added to the collection of Henry Clay Frick.

PALAU. See Chemistry, Industrial.

PALESTINE. A small portion of Asiatic Turkey, in the southwestern part of Syria. The area is estimated at 9800 square miles (about 6000 square miles west, and 3800 square miles east, of the Jordan River). The estimated population is 720,000, consisting of about 500,000 Mohammedans (mostly Arabs), 120,000 Jews, and 100,000 Christians. Estimated populations of the chief towns: Jerusalem, 100,000 (including 65,000 Jews); Jaffa, 50,000 (12,000 Jews); Gaza, 40,000; Nablus, 28,000; Haifa, 20,000 (2000 Jews); Hebron, 20,000 (1000 Jews); Safed, 18,000 (10,000 Jews); Bethlehem, 16,000; Nazareth, 15,000. The country produces grapes, citrus fruits, figs, dates, and olives. The chief manufactures are olive oil, wine, and soap. In 1914 there were about 500 miles of railway: Jaffa-Jerusalem, 54 miles; Haifa-Deraa, 105 miles; Damascus-Deraa, 75 miles; Deraa-Maan, 208 miles; Damascus-M'zerib, 62 miles. See War of the Nations.

PANAMA. A republic situated between Costa Rica and Colombia. The city of Panama is the capital.

Area, Population, etc. Panama consists of eight provinces, having a total estimated area of 33,776 square miles. The population of the republic (exclusive of the Canal Zone, which belongs to the United States) is probably about 375,000. According to a 1917 enumeration, the city of Panama has 60,761 inhabitants (30,793 males, 29,968 females). Colón has about 30,000 inhabitants; other important towns are David and Bocar del Toro. Movement of the population in 1915 and 1916 respectively: births, 12,040 (of which, 8077 illegitimate) and 9849; deaths, 7359 and 5036; marriages in 1916, 682. In October, 1917, a law became effective requiring civil registration of marriages; without such registration a marriage is invalid. Government schools in 1916 numbered 398, with 24,150 pupils enrolled.



JERUSALEM.

0 — 1000 — 2000 FEET

½ MILE

1	Pool of Bethesda?	6	*Mosque El Aksa*
2	*Serai*	7	*Mosque of Omar (Kubbet-es-Sakhra)*
3	*Armenian Convent*	8	*Ger. Ch. of The Redeemer*
4	*Greek Convent*	9	*Ch. of the Holy Sepulcher*
5	*St. Anne's Church*		

PALESTINE.

All modern names are in *Italic* type.
All ancient (Biblical and Historical) names are in upright type.

Scale of Miles.
0 5 10 15 20 25

Kilometers.
0 10 20 30

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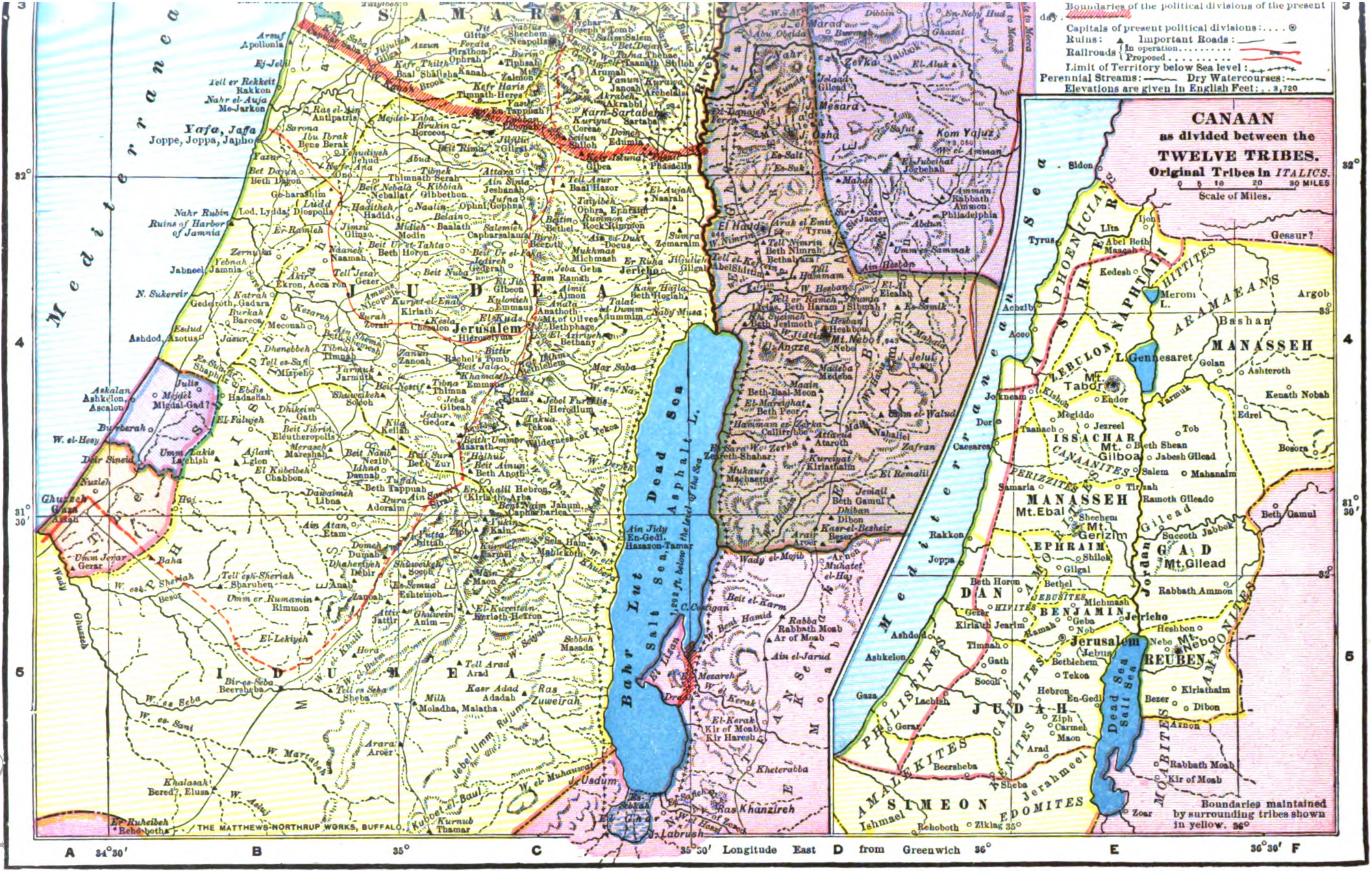
→ **REFERENCES.** ←

Boundaries of the political divisions at the time of CHRIST : ·· —— ·· —— ··

Roman Proconsulate of Judea :	🟨
Roman Province of Syria :	🟥
Tetrarchy of Herod Antipas :	🟥
Tetrarchy of Philip :	🟩
Free Territories :	🟪
Nabateans :	🟪


CANAAN
as divided between the
TWELVE TRIBES.
Original Tribes in ITALICS.
0 5 10 20 30 MILES
Scale of Miles.
Boundaries maintained by surrounding tribes shown in yellow.
Boundaries of the political divisions of the present day
Capitals of present political divisions
Ruins
Important Roads
Railroads In operation
Proposed
Limit of Territory below Sea level
Perennial Streams
Dry Watercourses
Elevations are given in English Feet: 3,720
Longitude East from Greenwich
A
B
C
D
E
F
34°30′
35°
35°30′
36°
36°30′
3
4
5
32°
31° 30′
Mediterranean
Mediterranean Sea
SAMARIA
JUDAEA
IDUMEA
Dead Sea
Asphalt L.
Bahr Lut
Salt Sea
1292 ft. below the level of the Sea
Jerusalem
El Kuds
Hebron
Jericho
Bethlehem
Yafa, Jaffa
Joppe, Joppa, Japho
Gaza
Ashdod, Azotus
Askalan
Ashkelon, Ascalon
Beersheba
Sidon
Tyrus
Jordan
PHOENICIANS
NAPHTALI
ASHER
ZEBULON
ISSACHAR
MANASSEH
EPHRAIM
DAN
BENJAMIN
JUDAH
SIMEON
REUBEN
GAD
ARAMAEANS
HITTITES
CANAANITES
PERIZZITES
JEBUSITES
HIVITES
AMORITES
PHILISTINES
AMALEKITES
KENITES
CALEBITES
Jerahmeel
EDOMITES
MOABITES
AMMONITES
Bashan
Gilead
Mt. Tabor
Mt. Gilboa
Mt. Ebal
Mt. Gerizim
Mt. Gilead
Mt. Nebo
L. Gennesaret
Merom L.
Rabbath Ammon
Rabbath Moab
Kir of Moab
Gessur?
Argob
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Production, Commerce, etc. The resources of the country, both agricultural and mineral, are developed only to a small extent. The chief crop is bananas; other products are corn, sugar cane, cacao, tobacco, yams, coffee, coconuts, and rubber.

Imports (exclusive of non-dutiable supplies for the Panama Canal) and exports have been valued as follows:

	1913	*1914*	*1915*	*1916*
Imps.	$11,397,000	$9,885,447	$9,037,200	$9,197,454
Exps.	5,383,028	3,800,517	3,422,755	5,506,725

The chief export is bananas, valued in 1915 at $2,197,250. In 1916, about 72 per cent of the imports were from, and about 98 per cent of the exports were to, the United States.

There are over 200 miles of railway in operation, including the Panama Railway (48 miles, across the Isthmus), which is owned by the United States.

There are about 1000 miles of telegraph line, with over 3600 miles of wire and 96 offices; post offices, 37.

Finance. The standard of value is gold. The monetary unit is the balboa, equivalent to the American dollar. The budget for the biennial period 1915 and 1916 showed estimated revenue of $10,622,000 and estimated expenditure of $11,646,000. For the biennial period 1917 and 1918, the budget balanced at $7,189,170. Estimated expenditure for the latter period included: government and justice, $2,658,468; finance and treasury, $1,715,302; public instruction, $1,442,912; fomento and public works, $1,187,804.

Government. The legislative power is exercised by the National Assembly, a single chamber of 33 members, elected for four years by direct vote. The president is elected for four years by direct vote and is ineligible for the next term. President for the term beginning October 1, 1916, Ramón M. Valdez. The constitution, which bears date of February 13, 1904, was amended in 1917; among the new provisions are one prohibiting capital punishment and another making the provincial governors (now appointive) elective from 1920.

History. Owing to the bad financial condition of the country a broad measure of fiscal reform was passed by the National Assembly in February. Trouble with the church arose over the question of civil marriage. The president and members of the National Assembly were excommunicated by decree of the Bishop of Panama, they having voted a law making civil marriage the only legal marriage. In May Panama asked of the United States government an advance of $10,000,000 for railway and road construction for the defense of the canal. Panama followed the United States in declaring war on Germany on April 7, the day after the American declaration. See **War of the Nations,** ***Diplomacy of the War.***

PANAMA CANAL. The total number of ships passing through the canal during the fiscal year ending June 30, 1917, was 1876, compared with 787 in the fiscal year of 1916. The aggregate gross and net tonnages of the ships passing through in 1917 was 8,530,121 and 6,900,358 respectively. The cargo carried through the canal amounted to 7,229,255 tons of 2240 pounds each. The following table shows the traffic through the canal over the principal trade routes.

TRAFFIC THROUGH THE PANAMA CANAL OVER THE PRINCIPAL TRADE ROUTES

Atlantic to Pacific

Route	*First Half Fiscal Year 1917* *Vessels*	*Net Tonnage*	*Tons of Cargo*
United States coastwise	9	38,569	54,166
United States to South and Central America	82	254,725	364,209
United States to Far East and Australasia	91	394,230	628,332
Atlantic terminus of Canal to South America	104	187,689	118,423
Europe to west coast of North America	11	42,152	49,218
Europe to west coast of South America	23	79,372	78,588
Europe to Far East and Australia	10	66,541	68,981
Miscellaneous routings	18	52,911	81,708
Vessels in ballast	102	328,965	.....
Total	450	1,445,154	1,438,625

Pacific to Atlantic

Route	*First Half Fiscal Year 1917* *Vessels*	*Net Tonnage*	*Tons of Cargo*
United States coastwise	9	48,207	45,947
South and Central America to United States	150	539,992	962,430
Far East and Australasia to United States	25	116,289	171,987
South America to Atlantic terminus of Canal	110	196,067	167,652
West coast of North America to Europe	31	117,783	196,937
West coast of South America to Europe	74	252,019	416,907
Far East and Australia to Europe	18	115,458	98,427
Miscellaneous routings	10	30,223	43,655
Vessels in ballast	29	25,514	.....
Total	456	1,436,552	2,103,942

On January 3, Lieut. Col. Chester Harding was named by the president to be governor of the Canal Zone, succeeding Maj. Gen. Goethals.

PAPER. The year 1917 was one of greatest importance and interest in the paper industry. The conditions rising from the war affected the paper trade, as it did other trades, but in some respects, more acutely. During the year suit was brought by the government against the manufacturers of newsprint paper for disregard of the agreement previously made as to the prices to be charged. An account of this will be found below. The total production of newsprint paper in the United States in 1917 was 1,349,729 tons, compared with 1,314,740 in 1916. If the entire production of all kinds turned out by these mills for both years be taken into account, a falling off in 1917 is shown. The production came in 1917, from 59 mills. The Canadian mills in 1917 showed a total production of 635,000 tons, compared with 580,000 in 1916. The imports from Canada were much larger in 1917 than in 1916. They amounted to approximately 954,000, compared with 475,000 tons in 1916. The growth of the newsprint industry in Canada since the removal of the United States Tariff in 1916 has been remarkable. Imports from Newfoundland were made possible by an arrangement entered into by printers and the Northcliff Mills in Grand Falls, in July, 1917. Lord Northcliff was unable to send any of the paper from his mills to England in 1916. He was therefore very ready to furnish American publishers. About 9200 tons were obtained from this source to the end of November. The great increase in the consumption of newsprint in 1916, amounting to nearly 15 per cent over the previous total, caused a stringency which obtained in the early months of 1917. This produced a raise in prices. Conditions improved during the year, until at the end, the stock on hand was about the same as at the end of 1916. The price on newsprint paper on contract remained fairly steady during the year at 3 cents f. o. b. mills. Contracts for 1918 have been made on this basis until April 1; thereafter, prices are to be fixed by the Trade Commission. An unusual amount of newsprint paper was exported during the year, the total exports being 92,000,000 tons, against 70,457 tons in 1916. The price obtained for export paper was $8 to $10 higher than the home market. South America, South Africa, and Australasia are obliged to depend entirely upon the United States and Canada for newsprint paper.

. Government Activities. On February 16, 1917, the principal newsprint manufacturers of the country submitted to the Federal Trade Commission a plan proposing that the commission fix a fair and reasonable maximum price for newsprint paper for six months beginning March 1, 1916. They also proposed to act with the advice of the commission in bringing about equitable distribution of their product. In accordance with this request, the Trade Commission began investigations with the plan of entering into such an agreement. On March 5, the commission submitted to the president a report on the newsprint investigations, announcing that $2.50 per 100 pounds f. o. b. mills was a fair and reasonable price for newsprint paper. The report stated that the increase in price of the newsprint in 1917 in most cases was greater than could be justified by the increase in production costs to the manufacturer. The commission declared that there was enough newsprint to meet all necessary demands during 1917, but that there was a close margin between supply and demand.

In April, seven newsprint manufacturers who had been indicted by the Grand Jury for alleged violation of the Sherman Anti-Trust Law pleaded not guilty. With the privilege of changing their pleas, on April 30, the men were released under bail for $3000 each. The trial of these men was set in May for October 8, 1917. The Federal Trade Commission in June reported to the United States Senate the result of its investigations into the high cost of the newsprint paper. The commission suggested that government control of all mills producing newsprint paper, book paper, ground paper, and chemical pulp, was absolutely necessary to bring about the sale of this paper at a reasonable price and to secure equitable distribution. The commission declared that the price of book paper had greatly increased since 1915, ranging from 65 to 84 per cent higher for various grades. The commission declared that there had been concerted action on the part of book paper manufacturers to increase prices. Following a discussion of this report in the Senate, a resolution was passed directing the Trade Commission to inform the Senate why it had not issued orders commanding manufacturers and distributors of newsprint paper to desist from the alleged illegal practice of fixing prices. In a report submitted to the Senate on its investigation of the book paper business in the United States, the commission in July attributed the advance in prices of the book paper, in part, to the activities of the manufacturers and secretary of the Book Paper Manufacturers' Bureau of Statistics. The charge was made that this advance in price was excessive and not justified by the increase in cost. The commission repeated its recommendation that the paper mills should be taken over by the government. It also called attention to the necessity for the enactment of legislation regulating the activities of the trade associations. Several days later, the commission filed an order to the book paper manufacturers and the Bureau of Statistics of the book paper manufacturers to cease making alleged violations of the law. The complaint alleged a violation of Section 5 of the act of Congress, approved September 26, 1914, which is the act creating the Federal Trade Commission. Under executive order the Federal government fixed the price of newsprint paper at 2½ cents. The International Paper Company, under protest, agreed to furnish the government with two car loads a day at this figure.

The trial of the seven newsprint manufacturers who were indicted on April 12 for alleged violation of the Anti-Trust Law, was postponed until November 12. In October, Senator Smith of Arizona submitted a detailed report on the newsprint situation. The report advocated the adoption of a resolution directing the Federal Trade Commission to supervise, control, and regulate the production and distribution of print paper and mechanical and chemical pulp in the United States.

Early in November the complaint lodged previously by the Federal Trade Commission against the book paper manufacturers, was withdrawn, and the manufacturers agreed to desist from further operations complained of by the commission. The case against the indicted manufacturers of paper was compromised. An agreement was entered into whereby the maximum price of newsprint paper at the mills, both in rolls and car load lots, is to be $3 per 100 pounds, until April, 1918, after which a maximum price will be determined by the Federal Trade Commission, this to go into effect to prevail for the duration of the war, and for three months thereafter. Before signing this decree, five of the seven indicted persons pleaded *noto contendere.* Indictments against the others were dismissed.

Canada. The exports of paper pulp from Canada in 1917 were valued at $26,077,646. The chemical pulp was valued at $14,332,920. In the fiscal year 1917, 976,617 cords of wood valued at $6,441,896 were shipped to the United States. This was sufficient to produce 450,000 tons of sulphite pulp, with a market value of $22,500,000.

PAPPATACI FEVER. (Sand-fly Fever.) Often erroneously called Three-day Fever. According to Shattuck, pappataci fever lasts from one to five days or even seven days. The onset is abrupt, with frontal headache, chilliness, nausea, muscular pains, and somnolence. The temperature varies from 101° to 102° F., but the pulse seldom exceeds 80. The blood picture shows a decrease in the white blood cells and particularly of the polymorphonuclear cells. The diagnosis is made by excluding malaria and other fevers, and by the circumstance that the disease occurs in the summer time in regions where the sand-fly abounds.

PAPUA, TERRITORY OF. Formerly British New Guinea. The southeasterly part of the Island of New Guinea; forming, with numerous small islands lying mostly to the southeast, a dependency of the commonwealth of Australia. The area of the dependency is stated at 90,540 square miles. The native population has been variously estimated at from 250,000 to 400,000. Population, June 30, 1916: Europeans, 992, colored (other than Papuan), 341. Port Moresby is the capital. The local industries are not numerous, but they are becoming more diversified. The soil is favorable to agriculture. June 30, 1916, plantations aggregated 47,506 acres. There were 34,016 acres under coconuts, 7671 under rubber, and 4812 under sisal hemp. About 350,000 acres are estimated to be under native-owned coconuts; a British ordinance obliges the natives to plant coconuts for food supply. Gold mining is an important industry, and copper mining shows rapid increase.

Financial and commercial statistics are given below:

	1913	*1914*	*1915*	*1916*
Imports	£218,323	£212,134	£202,055	£228,040
Exports	128,016	123,140	84,714	125,428
Revenue	48,846	54,708	51,961	49,311
Expenditure ..	85,170	81,095	82,535	77,913
Shipping, tons.	306,478	358,506	328,007	247,887

PARAFFIN. Several clinicians have reported their experiences with paraffin dressings for superficial wounds and burns, and their conclusions may be illustrated by the report of Dr. J. R. Beiter, surgeon to the United Alloy Steel Corporation, Canton, Ohio, who records a series of over 4000 paraffin dressings, principally in burns of all kinds. Beiter experimented with various formulas containing varying proportions of wax, olive oil, scarlet-red, and other healing antiseptics, but finally discarded all drugs, using only a commercial product called "Parowax." The method of applying a paraffin dressing is as follows: The wound is first cleaned and dried. The wax being heated to the melting point in a water bath, over the burned area the preparation is applied with a brush, care being taken that the healthy skin edges are covered with wax, which adheres firmly, making an impermeable but flexible dressing under which the ordinary secretions of the wound collect as under a natural scab. Over this a thin layer of cotton or wadding is placed, and a second film of wax applied, sealing the edges to the skin. Over all a heavier cotton dressing is bandaged. The wound must be thoroughly dried or the dressing will not adhere. Applying the wax to the raw surface was found to be extremely painful in many cases, but this disadvantage was met by first painting the wound with liquid petrolatum. Beiter sums up the advantages and disadvantages of paraffin dressing somewhat as follows: The method is inexpensive; it is comfortable, because firm and smooth and granulations cannot grow into it as in the case of gauze; it is clean, because the wound discharges are retained under the impermeable wax film; the outer dressing remains clean and odorless. He says he found that superficial burns heal quickly, but that deep burns do not undergo repair any more rapidly than with other methods, and moreover scarring is just as marked and the time of healing just as long. The method requires time, care, and patience.

Torald Sollmann finds that the addition of other substances to paraffin are not helpful and are sometimes disadvantageous. He advises that paraffin for use on burns should be solid, but possess more ductility and pliability than the official preparations, and should have a relatively low melting point; i. e., it should be liquid at or below 50°C.

AMBRINE. A French secret preparation of paraffin, to which is added some substance to make it plastic and adhesive. It is used as a dressing for superficial wounds and burns. Although ambrine has been on the market for some years, it has recently been exploited as a marvelous dressing for war wounds. Many other preparations of similar nature have been brought forward under proprietary names during the past year, such as Stanalind surgical.

PARAGUAY. An inland South American republic. The capital is Asunción.

AREA, POPULATION, ETC. Paraguay proper, lying between the Paraguay and Alto Paraná rivers, has an estimated area of about 97,700 square miles. A nearly equal area, between the Paraguay and Pilcomayo rivers, is claimed by both Paraguay and Bolivia, but is usually regarded as Paraguayan. The population of Paraguay proper has been estimated at 800,000; the people are largely a mixture of Spanish, Guarani, and negro blood, but there are many pure, or nearly pure, Guaranis. The disputed region, the Chaco, has a sparse Indian population, numbering perhaps 50,000. Asunción has probably about 100,000 inhabitants; Villa Rica, 30,000; Concepción, 25,000.

Elementary instruction is free and nominally compulsory. The reported enrollment in elementary schools in 1916 was 80,142 (44,623 males, 35,519 females). There are a few institutions for secondary and special instruction.

PRODUCTION, COMMERCE, ETC. The principal crops are yerba maté, corn, beans, alfalfa, manioc, tobacco, and various fruits, especially oranges; other products include cotton, peanuts, sugar cane, sweet potatoes, and rice. The production of yerba maté in 1915 was 70,495, and in 1916 81,821 metric quintals; sugar, 15,360 and 7880; tobacco, 90,000 and 90,000; peanuts, 9000 and 11,000. The output of tannin in 1915 was 153,590 and in 1916 284,210 metric quintals. Reported number of cattle in 1915, 5,249,043; sheep, 600,000.

The table below shows import and export values in pesos (peso = 96.47 cents). As the figures are based on the fixed valuations specified in the tariff of 1909, the actual values are greater, for 1916 probably 50 per cent greater, than the values given.

	1913	*1914*	*1915*	*1916*
Imports .	8,119,997	5,149,465	2,405,888	4,679,033
Exports .	5,630,929	4,584,358	5,636,172	4,861,677

Leading imports in 1915 and 1916 respectively, in thousands of pesos: textiles (chiefly cotton goods), 797 and 1927; provisions, 658 and 1069; hardware and machinery, 321 and 774; haberdashery and dry goods, 101 and 202; chemicals and drugs, 118 and 165; ready-made clothing, 96 and 158; beverages, 81 and 147. The principal exports are quebracho extract, cattle hides, cattle, beef products, woods, tobacco, and oranges. The export of yerba maté in 1915 was 47,093 and in 1916 32,658 metric quintals; cattle, 29,509 and 28,455 head. Trade by countries, in thousands of pesos:

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
United Kingdom	795	1,799	197	80
Argentina	789	1,601	3,637	3,575
United States	217	582	303	234
Italy	175	264	39	146
Spain	117	181	85	873
Uruguay	31	52	574	229
Germany	167	32	4	...
T'l, including others	2,406	4,679	5,636	4,862

In 1913 and 1914 respectively, imports from Germany were valued at 2,243,924 and 1,398,002 pesos; exports to Germany, 1,235,758 and 810,483.

COMMUNICATIONS. Asunción and Concepción, on the Paraguay River, have steamer communication with Argentina. From Asunción a railway extends (234 miles) to Encarnación, on the Alto Paraná, whence a train ferry connects with the Argentine railway system. Telegraphs, 2485 miles, with about 70 offices. Post offices, 385.

FINANCE. The gold peso, used as a monetary unit, is that of Argentina, which is equivalent to 96.47 cents. The actual peso in circulation is paper, of fluctuating and greatly depreciated value; in 1917 it was worth about 2¾ cents. The budget authorized by the Congress for the year ending June 30, 1918, placed the estimated revenue at 911,113 pesos gold and 59,690,700 pesos paper; expenditure, 1,016,835 pesos gold and 65,486,657 pesos paper. The chief sources of revenue are import and export duties and direct taxes. Reported outstanding foreign debt, December 31, 1916, £716,450; acknowledged internal debt, 1,518,997 pesos gold and 16,448,562 pesos paper; in addition, there was outstanding paper currency amounting to 115,000,000 pesos.

GOVERNMENT. The legislative power is exercised by a congress of two houses, the Senate and the Chamber of Deputies. Senators (13 in number) are elected for six years, deputies (26) for four years, all by direct vote. The president and vice-president are elected for four years by indirect vote. The president in 1917 was Manuel Franco, who was inaugurated August 15, 1916, in succession to Eduardo Schaerer. Vice-president, José P. Montero.

PARALYSIS, INFANTILE. See POLIOMYELITIS.

PARINAUD'S CONJUNCTIVITIS. This disease of the eyelids, which is characterized by the formation of granulations, is chiefly of interest because it is frequently mistaken for trachoma. Collins, in the United States Public Health Reports, reminds the health officer that he should keep in mind this form of conjunctivitis when searching for trachoma. The granulations are found at the nasal side of the upper lid and in the upper retrotareal fold, have a peculiar, yellowish, semi-translucent appearance, and secrete mucus, but not pus. There may be slight constitutional disturbances. The disease disappears in two or three weeks under simple treatment.

PARK COLLEGE. A co-educational institution, under the auspices of the Presbyterian Church, at Parkville, Mo. In the fall of 1917 there were 405 students and 20 members of the faculty; one member of the faculty and 60 students left to enter government service. During the year Copley-Thaw Hall, the president's residence, was erected and permanent improvements were made costing upwards of $25,000. Endowment was increased by $170,000, making the total of productive funds about $676,000 and the income therefrom about $32,000. Volumes in the library numbered 25,000. The college was founded in 1875. President, Frederick William Hawley, D.D.

PARRESINE. A mixture composed of paraffin, 94 to 96 per cent; gum elemi, 0.20 to 0.25 per cent; Japan wax 0.40 to 0.50 per cent; asphalt, 0.20 to 0.25 per cent, and eucalyptol, 2 per cent; with some coloring matter (gentian violet and alkannin). See PARAFFIN.

PARRY, WILL H. An American trade official died in Washington, D. C., April 21, 1917. He was born in New York in 1864, and studied at the College of the City of New York and at Columbia. For ten years after 1884 he was editor and publisher of papers in Washington, becoming managing editor of the Seattle *Post-Intelligencer*. As city comptroller of Seattle from 1894 to 1900 he revised the city's finances and brought about municipal improvements. For two years he was an alderman and then for four years president of the City Council. From 190[illegible] till his appointment in 1915 as member of the Federal Trade Commission, Mr. Parry was treasurer and manager of the Moran Shipbuilding Company, which during this period built the battleship *Nebraska*. He had much to do with the success of the Alaska-Yukon-Pacific Exposition, as chairman of the ways and means committee and of the executive committee. Since he had been on the Trade Commission he had become its vice-chairman and had directed important economic investigations, the last of which was the newsprint inquiry. In politics he was a Progressive Republican.

PATENTS. See UNITED STATES.

PAVEMENTS. See ROADS AND PAVEMENTS.

PAYNE, OLIVER HAZARD. An American capitalist, the benefactor of Cornell Medical School and other institutions. He was born in Cleveland, Ohio., in 1842, and died June 27, 1917. He served in the Civil War, entering the 124th Ohio Infantry as a lieutenant. In 1865 he was brevetted a brigadier general of volunteers for meritorious services. After the war he engaged in the iron and oil businesses in Ohio and New York. Payne gave $500,000 for the establishment and maintenance of the Cornell Medical School. This was the first of many gifts to that institution, culminating in an endowment fund of $4,500,000 in 1913. He also gave $100,000 each to the University of Virginia and to Western Reserve University. By his will he left $5,000,000 to educational and charitable institutions. The chief beneficiaries were: Lakeside Hospital, Cleveland, $1,000,000; Yale University, $1,000,000; New York Public Library, $1,000,000; Phillips Andover Academy, $500,000; St.

Vincent's Charity Hospital, Cleveland, $500,000; Cleveland Jewish Orphan Asylum, $200,000; Hamilton College, $200,000; University of Virginia, $200,000; Cornell Medical College, as an endowment fund, $500,000.

PEABODY MUSEUM. The Central American Expedition, under the charge of Mr. Samuel K. Lothrop, continued its work during the year, the centre of operations being Tegucigalpa, Honduras. Several large groups of ruins have been discovered in Honduras and Guatemala. Field work has been carried on in the cliff-house region of northeastern Arizona, where several burial caves were explored and a considerable collection obtained. The expedition to the remote villages of the Kwakuitl Indians of British Columbia resulted in much new material relating to their ceremonies and domestic life. During his expedition to the upper Amazon, Dr. A. Hamilton Rice secured a valuable ethnological collection from tribes of the Rio Negro region. The Harvard Peruvian Expedition explored various burial caves in the vicinity of Huancabamba, northern Peru. A number of mummified human bodies were secured, which were wrapped in cotton shawls or blankets woven in stripes or decorated with painted designs. These have been added to the museum's collection. The first volume of the *Harvard African Studies*, a quarto of some 300 pages and 60 plates, containing papers on African archæology and ethnology, has been published by the African department of the Museum; and the seventh volume of the Museum *Papers*, bearing the title *History of the Spanish Conquest of Yucatan and the Itzas*, has been issued. Two of the five large exhibition halls in the new section of the Museum have been opened to the public, one of which is devoted to the archæology and ethnology of Middle America. In the other are shown the collections from South America.

PEACE MOVEMENT. See INTERNATIONAL PEACE AND ARBITRATION.

PEACE PROPOSALS. See UNITED STATES AND THE WAR; WAR OF THE NATIONS.

PEAT. See CHEMISTRY, INDUSTRIAL.

PELLAGRA. The question as to whether pellagra is a communicable disease; whether it is due to a specific organism or perverted diet, appears to be no nearer solution than heretofore. Sambon has maintained for eleven years that the disease is infectious, possibly due to a protozoön, and transmitted by the sting of some winged insect. He finds his theories sustained by his recent studies in the various foci of pellagra in Europe, United States, and West Indies, and he has proved its presence in several parts of France, British Guiana, and Great Britain itself. He maintains that the history of the disease through the centuries shows that it occurs constantly in certain regions, like sleeping sickness, and that these localities are permanent endemic foci. Outside of these foci the disease is not contracted nor transmitted. It does not spread in hospitals or asylums to the medical or nursing forces or other inmates, or from a pellagrin to her nursing infant. The disease recurs like malaria; the flare-up may occur in March, or the new case may develop within the following three months.

Tizzoni has described a germ which he believes to cause pellagra and which he found in the blood of all insane pellagrins examined at the Mombello Asylum. In a case showing skin lesions the germ was cultivated from the cerebrospinal fluid, from the spleen, and from the scales of the skin lesions. He believes that the organism passes through three phases in its cycle of evolution. It is first a bacillus, then a streptococcus, and finally a staphylococcus, changing from one phase to the other irregularly. The blood may contain the organism when patients are apparently free from the disease and the passage from one phase to another seems to correspond with changes in the manifestations of the malady. The streptococcus form seems to be the most toxic, the staphylococcus being next in severity. The bacillary phase seems to be non-toxic.

Attempts by members of the U. S. Public Health Service to transmit pellagra from one individual to another were made at four widely separated localities: Washington, D. C., Columbia, S. C., Spartanburg, S. C., and New Orleans. Sixteen volunteers, mostly members of the Public Health Service, were subjected to various procedures intended to afford evidence for or against the infectiveness of pellagra. The materials used were blood, nasopharyngeal secretions, epidermal scales from the skin of pellagrous lesions, urine, and feces. Blood was administered by intramuscular or subcutaneous injection; the nasopharyngeal secretions were applied to the mucous membrane of the nose and pharynx; scales and excreta were given by mouth. None of the subjects had developed pellagra symptoms, although an interval between five and seven months had elapsed since the experiment was made. The results seem to show that pellagra is not a communicable disease.

Petersen has made a statistical study of the mortality from pellagra in the United States during 1915 and 1916. The States are divided into groups with their mortality for 1916 as follows:

North Atlantic States: Maine, 15; New Hampshire, 10; Vermont, 3; Massachusetts, 37; Connecticut, 1; Rhode Island, 7; New York, 27; Pennsylvania (no statistics available); New Jersey, 4.

South Atlantic States: Delaware, 0; Maryland, 3; District of Columbia, 9; West Virginia (complete statistics not available); Virginia, 249; North Carolina, 476; South Carolina, 672; Georgia, 958 (estimated); Florida, 202 (statistics incomplete).

South Central States: Alabama, 677; Mississippi, 840; Louisiana, 295; Texas, 452; Oklahoma, 71; Arkansas, 500 (estimated); Tennessee, 607; Kentucky, 120.

North Central States: Ohio, 6; Indiana, 4; Michigan, 4; Illinois and Nebraska (statistics not available); Wisconsin, 0; Minnesota, 1; Iowa, 4; Missouri, 39; North Dakota and South Dakota, 0; Kansas, 10.

Western States: Oregon, 3; California, 25; Colorado, 3; Washington, Idaho, Utah, Wyoming, Nevada, Montana, 0; New Mexico and Arizona (statistics not available), although deaths from pellagra occur in these States.

The comparison of the death rate among the white and colored races, based on the mortality per hundred thousand population, is shown as follows: Oklahoma, white, 2.6; colored, 6.6; Tennessee, white, 20.0; colored, 49.0; Florida, white, 13.2; colored, 38.0; North Carolina, white, 14.6; colored, 30.0; District of Columbia, white, 3.0; colored, 1.0; Alabama, white, 19.0; colored, 44.0; Louisiana, white, 7.0, colored, 28.0; Maryland, white, 0.17, colored, 0.4; Mississippi, white, 19.0, colored, 61.0; Kentucky, white, 5.3, colored, 2.6.

In the colored race the mortality has seen a greater decrease than among the white. As to the mortality from pellagra, health authorities in the Southern States estimate that about 0.5 per cent of the population are pellagrins. This would mean, therefore, that of 32,500,000 people in the pellagrous area, there are about 165,000 pellagrins, and that for each death there are about fifteen living pellagrins. A review of the statistics shows that the mortality decreased in 1916, the total for 1915 being 10,663, while that for 1916 was 6289. The reduction was most marked in the South Atlantic States, where the mortality dropped from 42 to 21 per hundred thousand population.

PENANG. One of the Straits Settlements (q.v.).

PENNSYLVANIA. Population. The population of the State in 1910 was 7,665,111, and on July 1, 1917, it was estimated to be 8,660,042.

Agriculture. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	1,575,000	62,212,000	$95,184,000
	1916	1,450,000	56,560,000	54,854,000
Wheat ...	1917	1,399,000	24,482,000	50,188,000
	1916	1,375,000	26,125,000	42,322,000
Oats	1917	1,175,000	41,125,000	30,021,000
	1916	1,130,000	35,030,000	19,967,000
Potatoes .	1917	321,000	29,532,000	39,868,000
	1916	272,000	19,040,000	28,179,000
Hay	1917	3,092,000	*a* 4,329,000	75,758,000
	1916	3,255,000	5,208,000	71,870,000
Tobacco ..	1917	41,500	*b* 58,100,000	12,201,000
	1916	36,100	49,096,000	6,972,000

a Tons. *b* Pounds.

Mineral Production. The production of bituminous coal in the State in 1916 was 170,295,424 net tons, valued at $221,685,175, an increase compared with 1915 of 12,340,287 net tons, or nearly 8 per cent in quantity, and of $54,265,470 or 32 per cent in value. The largest factor in this increase was the activity of the iron and steel business, which resulted in the tremendous demand for coke. Coke made in both beehive and by-product ovens in the State was 5,656,833 tons more in 1916, than in the previous year. Railroad and general industrial demands broke all records for coal. Car shortage, insufficient labor supply, labor disturbances, and a lowering of the efficiency of the labor, all restricted the production to such an extent that at times the mines of the State were not able to supply even the most urgent demands of their normal markets. Coal from Ohio, Indiana, and Illinois was shipped into Pennsylvania. A lack of transportation from mine to market was the most potent check on output. In the last quarter of 1915 and the first months of 1916 there was a marked shortage of cars. A temporary lull in demand in April relieved conditions somewhat, and from May to August the supply of cars was more nearly normal. From September to the end of the year, as the demand for coal increased, the car shortage became worse. Scarcity of labor was most apparent during the summer when cars were more readily to be had, but there was in reality no improvement in the supply of men as the year progressed. Central Pennsylvania was more seriously affected by the scarcity of labor and the labor troubles than the other bituminous fields of the State. The number of men engaged in the mining of bituminous coal in the State in 1916 was 168,212, compared with 174,593 in 1915.

The production of anthracite in 1916 was 87,578,493 net tons, valued at $202,009,561, compared with 88,995,061 in 1915, valued at $184,653,498.

The production of petroleum in the State in 1916 was 7,592,394 barrels, valued at $19,149,885, compared with 7,838,705 barrels in 1915, valued at $12,431,353, or a decrease of 3 per cent in quantity, but an increase of 54 per cent in value.

The iron ore mined in the State in 1916 amounted to 559,431 tons, compared with 363,309 tons in 1915. The value of the ore shipped from the mines in 1916 was $702,633, compared with a value in 1915 of $333,697.

Natural gas in 1916 was valued at $24,344,324, compared with a value of $21,139,605 in 1915.

Transportation. The total number of miles operated in the State in 1915, the latest for which figures are available, was 12,954. The lines having the longest mileage were: The Pennsylvania, 4527; the Delaware, Lackawanna, and Western, 958; the Delaware and Hudson, 885; the Central R. R. of New Jersey, 680; the Erie, 987; the New York Central, 919.

Finance. The total receipts for 1917 were $31,700,489. The total expenditures were $29,360,493. The balance at the beginning of the year was $5,790,687, and at the end, $8,130,684. The bonded debt of the State amounted to $651,110.

Education. The total enrollment in the public schools was, in 1917, 1,506,821, with the average daily attendance of 1,234,000. The number of female teachers was 33,935, and that of male teachers 8728. The average monthly salary of male teachers was $70.30, and that of female teachers, $50.46. The total expenditure for school purposes was $60,833,782.

Charities and Corrections. The charitable and correctional institutions of the State include the Pennsylvania State Lunatic Asylum at Harrisburg, the State Hospital for the Insane at Warren, State Hospital of the northeastern district of Pennsylvania at Norristown, State Asylum for the Chronic Insane at Wernersville, Homeopathic State Hospital for the Insane at Allentown, State Hospital for the Criminal Insane at Fairview, State Institution for the Feeble-Minded of Western Pennsylvania at Polk, State Institution for the Feeble-Minded in Eastern Pennsylvania at Pennherst, Pennsylvania Village for the Feeble-Minded at Glen Iron, State Hospital for Injured Persons at Fountain Springs. There are hospitals maintained in all the mining districts of the State. The Pennsylvania Soldiers' and Sailors' Home at Erie is also under the supervision of the Board of Public Charities. The penal institutions include the Western Penitentiary at Pittsburgh and Bellefonte, Eastern Penitentiary at Philadelphia, the Pennsylvania Training School at Morganza, the Pennsylvania Industrial Reformatory at Huntington, the State Industrial

Training Home for Women at Muncie Station.

POLITICS AND GOVERNMENT. No State officers were elected in 1917, but Henry Houck, secretary of internal affairs, having died, his son, Paul W. Houck, was appointed by the governor to the vacancy. Charles A. Snyder and Harmon M. Kephart took office as auditor general and State treasurer, respectively. One representative in Congress, E. H. Beshlin, Democrat, of the 28th district, was chosen to fill the vacancy caused by the resignation of O. D. Bleakeley, Republican, elected in 1916, but who did not take his seat, resigning, in consequence of charges of violation of the Corrupt Practices Act.

Municipal elections in Philadelphia and Pittsburgh were distinguished by more than the customary factional bitterness. At the primary election on September 19, in Philadelphia, Policeman George Eppley was shot to death while protecting the Fifth Ward leader of the Penrose faction of the Republican party from assault. "Gunmen" had been imported from New York to influence the election by intimidation in favor of the Vare faction. The mayor of Philadelphia, Thomas B. Smith, half a dozen policemen, several ward politicians, a number of private detectives, a dozen or more New York "gunmen" were indicted after an investigation, the charges ranging from conspiracy to murder. Jacob Mascia, who killed Eppley, was convicted of murder in the second degree. In consequence of the disclosures public indignation rose high, the Town Meeting Party was hastily organized and placed a ticket in the field. At the November election that ticket was defeated and the councilmanic seats were divided between Penrose and Vare partisans.

In Pittsburgh, municipal election non-partisan, Edward V. Babcock, a representative business man and millionaire, Dr. James P. Kerr, president of City Council, and William A. Magee, public service commissioner and former mayor, all Republicans, were the principal candidates at the primary. Kerr was eliminated. Babcock had the support of the Penrose State Republican faction; Magee was supported by the Vares and Governor Martin G. Brumbaugh. Babcock was elected, but four of five councilmen elected adhere to his opponent's leadership, giving the Magee faction a majority in the council of nine members.

The session of the legislature was distinguished for factional manœuvring and little legislation of importance, except the enactment of a direct inheritance tax law. Bitterness engendered in the political campaign of 1916 was injected into the organization of the House. Threats to impeach Governor Brumbaugh on charges of making a false return of his election expenses in 1914 and of misuse of the executive's extraordinary expense fund of $30,000 came to nothing. At the end of the session he sent to the Senate a long list of nominations for important State positions. Several of them were not confirmed and as soon as the legislature had adjourned the governor reappointed his men. Their right to hold office was questioned by the auditor general; the cases were pending in the highest court at the close of the year.

In the latter part of July, race riots occurred in Chester. The trouble arose from the murder of a white by several negroes. A mob of 500 men, in revenge, forced their way through the police into the part of the city inhabited by the negroes. One of them shot the leader of the mob and killed him. This so infuriated the people, that the city authorities were not able to handle the situation. The mob raided a street car on which were two negroes, and shot one of them. Several hours later a policeman was killed by a negro when trying to quell the outbreak.

A State Council of Defense was provided for and an appropriation of $5,000,000 granted to it. A factional dispute arising over the control of the expenditure of this money, practically nothing was attempted toward carrying out the purposes of the act. In spite of the discouraging official example, Pennsylvania rose splendidly to all demands for support of the nation's war programme. See STRIKES.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below.

The laws pertaining to civil and criminal procedure were amended in important details. Provision was made that any person sentenced to pay a fine, or to pay the cost of any criminal procedure against him, may, in the discretion of the court, be permitted to pay in installments during a period of not more than twelve months. Cities of the second class are authorized, whenever an emergency arises, to purchase food, coal, and necessities of life and resell the same to residents. A State Council of Defense was created to coöperate with the National Council. Provision was made for the payment, by the State, of the difference, not exceeding $2000 a year, between the amount paid by the Federal government, and the amount received in civil employment, by those entering the military service. This amount is paid to dependents. The city manager plan for cities was approved. It was made a misdemeanor to carry on business under an assumed or fictitious name without having first filed with the proper officials a certificate stating both the assumed and the business name. The trade in opium, cocoa leaves, or any derivatives was regulated by statute. A commission was created to study health insurance. The banking laws were amended in important details All trading by banks on Saturday after twelve o'clock noon was made valid, but banks are not required to keep open after that hour.

STATE OFFICERS. Governor, Martin G. Brumbaugh; Lieutenant-Governor, Frank B. McClain; Secretary of the Commonwealth, Cyrus E. Woods; Treasurer, Harman M. Kephart; Auditor, Chas. A. Snyder; Adjutant-General, Frank D. Beary; Attorney-General, Francis S. Brown; Superintendent of Education, N. C. Schaeffer; Commissioner of Insurance, Chas. A. Ambler: Secretary of Agriculture, Charles E. Patton—all Republicans except Nathan C. Schaeffer, Democrat.

JUDICIARY. Supreme Court: Chief Justice, J. Hay Brown; Associate Justices, S. Leslie Mestrezat, Wm. P. Potter, John Stewart, Robert von Moschzisker, Robert S. Frazer, Emory A. Walling; Clerk, Wm. Pearson.

PENNSYLVANIA, UNIVERSITY OF. A nonsectarian institution of learning located at Philadelphia, Pa. In the fall of 1917 there were 6620 students and upwards of 700 members of the faculty. There were 450,000 volumes in the library. Productive funds in 1917 amounted to $7,544,083, net assets in addition to $22,479,540, and income from all sources to $2,544,215. Gifts to the university for the year ending June 30, 1917, amounted to $620,668, in addition to gifts to the University Hospital and to the University Museum, which totaled respectively $143,334 and $326,324. The university was founded in 1740. Provost, Edgar Fahs Smith, LL.D.

PENNSYLVANIA STATE COLLEGE. A coeducational State institution at State College, Pa. In the fall of 1917 there were 2074 students and 285 members of the faculty. In the library there were 60,538 bound volumes and 40,000 pamphlets. D. A. Anderson was made professor of education and E. L. Nixon professor of plant pathology during the year. Productive funds in 1917 amounted to $618,795 and the income therefrom to $31,020. The college was founded in 1855. President, Edwin Erle Sparks, LL.D.

PENOLOGY. New features of social philosophy are nowhere better reflected than in the changing attitude of society toward law breakers and their punishment. Modern theories of criminology lay stress upon heredity and environmental factors in the creation of the criminal, over which the latter himself has no control. Consequently the ultimate responsibility for the existence of criminals rests largely with society. Similarly modern educational and psychological studies have shown the necessity of more individual treatment and the importance of appeals to self-respect and the latent manhood of the prisoner, while at the same time medical and sanitary sciences have shown evils of close confinement, idleness, and the inhumane punishments of ignorant prison authorities. With a view to rehabilitating the convict modern penology demands the education of prisoners in the rudiments of learning, their training for economic independence and usefulness, and the cultivation of their own sense of civic and moral worth.

New York State. For a number of years prison affairs in New York State have seen rapid developments. Among these has been the construction of a new prison at Wingdale in Dutchess County to replace Sing Sing. The latter was built in 1825-30 according to mediæval ideas; the demolition of its cell block was ceremoniously begun on November 9 when Governor Whitman lowered the first stone. The new prison will combine farming and industrial activities and be composed of groups of detached or semi-detached small buildings. For its construction $1,250,000 was appropriated; oversight was placed in the hands of the Commission on New Prisons which began excavation in the fall. It was planned to utilize Sing Sing, which represented an investment of $1,000,000, as a central receiving and distributing station for all New York prisoners. Law breakers would remain there from three to six months during which they would receive thorough mental and physical examinations. This would permit scientific classification and their subsequent distribution to appropriate institutions.

While the method of self-government by a league of the prisoners introduced by Thomas M. Osborne when warden of Sing Sing was not viewed with equal enthusiasm by the new Superintendent of State Prisons, James M. Carter, the idea was introduced in the new Westchester County penitentiary at East View by the warden, Calvin Derrick. Here the league was formed also by the prisoners but its constitution differed from that in operation at Sing Sing and at Ione, Cal., in that the prisoners' court was given no punitive powers. The only penalty permitted was the expulsion of any individual who refused to meet conditions necessary for the "establishment of good relationship" from the league for an indefinite period. The league is called the Effort League, with "struggle for better citizenship, noble character, and higher morals" as its motto. This prison was one of three institutions consolidated under the management of D. Everit Macy, Commissioner of Charities and Corrections of the county. An appropriation of $650,000 was made for its construction. The general plan included also a county hospital for which $300,000 was authorized and the almshouse for which also an adequate sum was provided. The psychiatrist of Sing Sing was to spend three and one-half days per week at the Westchester penitentiary starting a clinic. In other ways most advanced methods were put into operation. Westchester County prisoners incarcerated on Blackwell's Island were to be removed.

New Jersey. In January articles appeared in the New York *Evening Post* and the *New Republic*, by Frederick Boyd and Patrick Quinlan, respectively, who had been convicted for I. W. W. disturbances at Paterson, setting forth evil conditions in the Trenton prison. It was claimed that this prison was bad in structure, in influence and in management; that men were chained to walls underground; that as many as four men were confined in the same cell; that women were confined with men; that there was no dining hall, men being fed in cells and corridors; that recreation was limited to half an hour a week; that consumptives mingled with the sound, and first offenders with hardened criminals; that contract labor was carried on in violation of the law. Thereafter a commission of five members was appointed by the State legislature to investigate the prison and at the same time Governor Edge removed the warden. Richard P. Hughes. This Commission substantiated most of the charges made. It laid special stress upon the prevalence of tuberculosis; said that a person committed for two years or more "is practically sentenced to death by disease." It made numerous recommendations including adequate physical and mental examination and classification, the establishment of a prison school, and the abolition of prison contractors. Another investigation by the State Department of Health showed that tuberculosis was not recognized until far advanced; that food, ventilation, and sanitation were all very bad. An appropriation was made to carry out recommendations for improvement.

Connecticut. One of the most astounding exposés of the year resulted from an investigation of the county jail at New Haven, Conn., by the civic federation of that city. Investigation was made by O. F. Lewis of the New York Prison Association and Hastings H. Hart of the Russell Sage Foundation for the federation. It was found that the control of the labor and of the discipline of 200 men was turned over to manufacturers in return for stipulated fees. Under the contracts made between the county and the manufacturer prisoners were required to work 10 hours for 5 days and 9 hours on Saturday each week. Prisoners not showing respect and industry were subjected to solitary confinement for 6 days. The receipts were only $7000 per year or about 10 cents per day for the labor of each inmate. Following this agitation steps were taken to secure a State commission to investigate all jails, and laws prohibiting such evils in the future.

NAVAL PRISONS. In connection with the voluntary imprisonment of Thomas M. Osborne on the Naval Prison Ship *Southey* at Portsmouth, N. H., Secretary Daniels stated that within 3 years the number of naval prisoners had decreased from 1835 to 620. This decrease was largely due to the extension of the principles of probation and suspended and indeterminate sentences introduced in 1915. It was his opinion that these modern methods had proved distinctly beneficial to naval discipline; had made possible the permanent discontinuance of disciplinary barracks at Port Royal and of the prisons on the U. S. S. *Philadelphia.* The saving in money was substantial. The Naval Prison system cost in 1913 $1,190,000; in 1915, $643,000; and in 1916 and 1917 about $350,000.

STERILIZATION. A Committee of the American Institute of Criminal Law and Criminology of eleven members was appointed to investigate and report on the question of sterilization of criminals. After investigation and considerable deliberation the committee asked for its dismissal on the ground that there was such a lack of scientific information as made sound judgment impossible. It described the problem as very complex, because involving "questions of humanity, of surgery, of law, of morals, religion, and sociology," concerning which opinions differed not only among the general public but among scientists. While some did not believe criminality to be inherited, others believed that it may be a combination of unit traits such as wanderlust, feeble-mindedness, and lack of control, which are inherited.

THE NATIONAL PROBATION ASSOCIATION held its 9th annual meeting at Pittsburgh June 5-7. The most important feature of the session was the report of the committee appointed in 1916 with Judge Charles W. Hoffman of the Board of Domestic Relations of Cincinnati as chairman. This committee recommended that a new court to be known as the "Family Court" should be organized to take over the work of existing juvenile courts and courts of domestic relations with a view to coördinating their investigations and probation work. The report said, "the unit of society is not the individual but the family. The cause of juvenile delinquency, dependency of children, desertion, and non-support, pauperism, alcoholism, divorce, and marital desertion are inter-related. All these in a measure can be traced to some defect in the family. It is apparent that to deal with the family effectively some court must have power to deal with it as a unit." The report recommended that such a court have a single judge and that it be amply equipped with probation, medical, and psychological experts. The chief probation officer of the Philadelphia Municipal Court, Miss Jane D. Rippin, stated that that court was in many respects already a family court, having achieved a high degree of coördination of the different aspects of its work. The Committee on Juvenile Courts reported that with the coördination of the Federal Children's Bureau a national study of juvenile courts was to be made and published. Mrs. Benjamin J. West, chief probation officer of the Juvenile Court at Memphis, was chosen president for 1917.

CONVICT LABOR. As the result of experiments in various Western and Southern States in the use of convict labor for road-building a widespread demand for a thorough investigation led the United States Department of Agriculture through its office of Public Roads and Rural Engineering, in coöperation with the Public Health Service, to make an exhaustive investigation. The inquiry was carried out during 1914 and 1915 and the results published on December 15, 1916, in *Bulletin* 414 of the Department of Agriculture. The investigation showed that there are six systems of convict labor in operation: 1. The lease system whereby convicts are hired to private employers who thus obtain complete control of the labor, food, shelter, and discipline; 2. the contract system whereby the State sells the labor of convicts for use on farms, in lumbering or quarrying, but retains care or control; 3. the piece price system whereby convict labor is utilized by contractors, usually within prisons, under State supervision at stipulated prices per article or amount of product; 4. the public account system under which the State carries on industries itself by means of convict labor and either uses or sells the product; 5. the State use system, similar to the foregoing, except that the products are used exclusively by the State; 6. the public works and ways system whereby convict labor is used on public construction rather than in manufacturing. Road building is an illustration of the last named system.

In 1914-15 only one State still used the lease system, having 950 convicts leased; 18 had 6981 convicts under the contract system; 4 had 1193 convicts under the piece price system; 19 had 11,807 convicts under the public account system; 35 employed 33,805 on the State use system; and 27 employed 11,063 convicts on public works and ways. Thus the last 3 systems which represent the newer systems for the utilization of convict labor included 86.2 per cent of the 65,799 convicts included in the study.

Among the advantages of road building were the following: More healthful than indoor work; most prisoners had previously been outdoor rather than shop laborers; road work has no degenerative mental effects; neither does it compete with free labor; it is highly valuable to the public and also benefits the convict himself; the freedom of outdoor life cultivates self-control and prepares the convict for discharge; and it is otherwise a useful factor in penal discipline.

Among disadvantages enumerated were the facts that it exposes the convict to public curiosity and may harden public feeling; congregation in road camps exposes all convicts to demoralization by the worst; many prisoners are not suited to hard physical labor; opportunity for escape is afforded; road building cannot be carried on in the winter; expense of maintaining prisoners in camps is large; frequently such labor is therefore more expensive than free labor under contract. This latter point was magnified by the fact that as a class convicts "undoubtedly possess a lower order of intelligence and less initiative, ability, and willingness in the performance of honest work than free laborers."

PENSIONS. See Old Age Pensions; Pensions for Mothers; United States.

PENSIONS FOR MOTHERS. During the five years 1912-16 so-called widows' pension laws were enacted in twenty-eight States. While even social workers deemed much of this legislation hasty and likely to foster a spirit of dependence, its widespread enactment revealed clearly not only the initiative suggestibility of American legislatures but also the existence of a real social problem. The main purpose of the movement was originally to enable widows with minor children to maintain their own homes on the theory that small children would be better reared by their own mothers than in institutions or other families. Humanitarian sentiment resulted not only in the broadening of the scope of such laws but in liberalizing the provisions made. Thus, while a number of States have granted allowances for minor children to widows, as in California, New Jersey, and New York, others have granted them to widows or mothers with husband in prison or asylum or wholly incapacitated, as Idaho, Iowa, Kansas, Missouri, Montana, and many others. But certain States, including Massachusetts, North Dakota, New Hampshire, and Utah grant allowances to any needy mother, while still others, as Colorado, Nebraska, Nevada, and Wisconsin go to the full limit by granting allowances to any parent (or grandparent or guardian) unable to care for a minor child.

Pennsylvania grants pensions to widows or deserted wives with minor children. The legislature appropriates a sum to be distributed among counties according to population; counties must duplicate their allotment. Previous to 1917 the annual State appropriation was $125,000; in 1917 this was raised to $200,000 besides $18,000 for supervision and investigation. With balances on hand and county appropriations, the plan will have nearly $900,000 for the two years 1918-19.

Philadelphia's experience with four years' operation of the pension plan was one of the few extensive inductive evidences of the success of the plan. It is a part of the theory of such pensions that the State will in any case be compelled to assume support of a large proportion of orphan children. Some of these drift into delinquency at once; others may be cared for in institutions but afterwards become delinquent. A test of the efficacy of mothers' pensions therefore is the relative amounts of juvenile delinquency before and after their adoption. In Philadelphia in four years this form of aid was extended to 722 children, not one of whom had been brought before the juvenile court. They represented various races and conditions. An additional social gain was not only the misery and vice escaped, but the better education, better start in life, and higher standards of living and conduct.

PEOPLE'S COUNCIL. See International Peace and Arbitration.

PERAK. A state (the most northerly) of the Federated Malay States (q.v.).

PERLECHE. A highly contagious affection of the lips, appearing at the corners of the mouth, always bilateral and seen most frequently in children. A study of the disease was first published by Lemaistre of Limoges, but it has long been known in France, Germany, and Italy, under various popular names. The disease was believed to be very rare in this country, but it is now thought that cases have been unrecognized. In the beginning the epithelium is smooth and whitish, with a mother-of-pearl tinge. Later the epithelium becomes thickened and macerated, small fissures having a red base appear, and in some cases there is slight erosion, not amounting to real ulceration. Ordinarily there is a spontaneous cure in a month, while under appropriate treatment it disappears in two or three weeks. Lemaistre isolated a germ which he named *Streptococcus-plicatilis.* Late investigators have always found a streptococcus present in the lesions. The disease is spread by the use of common drinking utensils, pencils, handkerchiefs, and towels and by kissing. Perleche is apt to be confounded with the mucous patch of secondary syphilis. The treatment consists in painting the lesions with a weak solution of silver nitrate, diluted tincture of iodine, copper sulphate, or the alum pencil. Spirits of camphor and alcohol are also recommended. Prevention is secured by forbidding the use of common towels, drinking utensils, etc.

PERONNE. A city in France. See War of the Nations, *Military Operations* (5).

PERSHING, John J. The first American army officer to command American troops on the battlefields of Europe.. Pershing is a graduate of West Point, and entered the regular army as a second lieutenant of cavalry in 1886. In the first years of his service Pershing fought in the Indian wars in the early nineties against the Apaches, on the Arizona border, and the Sioux. He was engaged in the brief war with Spain in Cuba, and after peace was declared he was immediately ordered to the Philippines. He then had the rank of captain. He fought with great bravery against the Moros and was awarded the rank of brigadier general in 1906. In order to reward Pershing, President Roosevelt jumped him over 862 officers who were his seniors in rank. The Moro fanatics were not finally subdued until 1913, when Gen. Pershing won the battle of Bagsag from the Sultan of Jolo. In January Pershing returned to the United States and was given command of the Eighth Brigade of the regular army, with headquarters at El Paso, Tex. There he remained until the Villa raid on Columbus, N. M., after which President Wilson ordered a punitive raid into Mexico and placed Pershing in command. He carried out this task to the entire satisfaction of the president. On the death of Maj. Gen. Funston, who was Gen. Pershing's immediate superior, President Wilson nominated Gen. Pershing to succeed him, and assigned him to the command of all the troops on the Mexican border. He held that post until he was assigned to the command of the American Expeditionary Force to Europe. He preceded this force to Europe in order to make arrangements for their coming. In the army he is known as "Black Jack." See United States and the War; War of the Nations, *Military Operations.*

PERSIA. A constitutional Asiatic monarchy extending from the Caspian Sea to the Gulf of Oman. Capital, Teheran.

Area and Population. The area is estimated at 1,645,000 square kilometres (635,135 square miles). The number of inhabitants is unknown, but a commonly accepted figure is 9,000,000, of whom about 2,500,000 are nomads. Population of Teheran, about 280,000; Tabriz, 200,000; Meshed, 130,000; Ispahan, 70,000; Kerman, 60,000; Yezd, 45,000; Resht, 42,000. The great majority of people are Mohammedans of the Shiah sect. Persia is for the most part an infertile plateau, mountain-bound on three sides. A salt desert occupies the central and eastern portions. The Karun is the only navigable river. To the north and west are heavy forests.

PRODUCTION AND COMMERCE. The agricultural products include cereals, cotton, sugar, opium, and tobacco. The country possesses valuable mineral resources—petroleum, coal, iron, copper, and lead; but exploitation on a considerable commercial scale is hindered by lack of transportation facilities. Silk and carpets are manufactured. The chief products for export, together with the imports for consumption, are shown in the table below with values in 1914-15 trade in thousands of krâns:

Imports	*1000 kr.*	*Exports*	*1000 kr.*
Cottons	142,000	Fruits	51,645
Sugar	127,210	Carpets	25,762
Tea	23,159	Cotton	73,485
Gold and silver bars	22,704	Fish	7,550
Gold and silver coins	3,919	Rice	21,375
Petroleum	18,036	Gold and silver coins	13,530
Cotton yarn	10,522	Gums	5,660
Flour	8,905	Opium	41,446
Woolens	8,672	Wool	12,207
Indigo, etc.	1,116	Cocoons	6,525
Haberdashery	7,400	Skins	7,354
Rice	7,021	Animals	9,698
Spices	3,285	Silk stuffs	3,205
Wool	1,340	Cottons	2,456
Animals	2,694	Hides	12,897
Iron and steel mfrs.	10,457	Silk	1,079
Silks	3,746	Wheat and barley	7,409
Tin, zinc, & lead	1,666	Pearls	372

The trade by countries is shown below in thousands of pounds sterling:

	Imports		*Exports*	
	1913-14	*1914-15*	*1913-14*	*1914-15*
Russia	6,471	4,669	5,492	4,374
U. K.	3,236	2,468	1,038	1,472
Turkey	406	318	670	357
Germany	552	297	54	24
France	237	185	88	19
Aus.-Hung.	162	64	13	9
Belgium	280	129	4	4
Afg'stan.	88	56	54	49
Italy	102	66	190	3
Oman	39	27	131	93
China	10	6	21	1
U. S.	4	7	186	74
Other	...	...	...	...
Total	11,767	8,332	8,288	6,601

The trade for 1915-16 is reported at £7,735,000 imports and £6,285,577 exports.

Vessels entered at Persian Gulf ports in 1914-15 trade totaled 1,591,080 tons (1,399,006 tons British); at Caspian ports (all Russian), 725,617 tons.

Trade is carried on over the great caravan routes. These are infested with brigands, with whom the Persian government is powerless to deal adequately.

A light railway (6 miles) runs from Teheran to Shah Ab dul Azim, and a Russian company has constructed a regular line from Julfa to Tabriz, opened March 7, 1916.

FINANCE AND GOVERNMENT. The customs office, as well as the postoffice, has been managed since 1900 by Europeans, native officials being represented as dishonest and oppressive. The revenue (about half of which is derived from taxes levied in kind or in cash upon the laboring classes) fluctuates between 70,000,000 at 100,000,000 krâns; no statement of expenditure can be made, except that it regularly exceeds the revenue. The Russian debt of 1900 amounts to 22,500,000 rubles at 5 per cent, payable in 75 years and guaranteed upon the customs receipts other than those of the province of Fars and of the Persian Gulf ports; debt of 1902, 10,000,000 rubles at 5 per cent; debt of 1913, 2,000,000 rubles at 7 per cent. British loans of 1910 and 1911 £2,675,181 at 5 per cent; loans of 1912, 1913, and 1914, £490,000,000 at 7 per cent. Floating debt, 104,870,000 krâns; annuities, 14,000,000 krâns. The exchange value of the krân is about 8.75 cents.

Persia is a constitutional monarchy, hereditary in the Shiah dynasty of the Kajars since 1794. The country is divided into 33 provinces administered by governors-general appointed by the Shah, but the nomad tribes are ruled by their own chiefs, so far recognized by the central government as to be held responsible for the collection of revenue. Persia became a party in 1912 to the Anglo-Russian Convention of August 31, 1907, by which each of the two contending powers agreed to confine its political and commercial operations to definite regions not overlapping; Persia agreed to respect these rights and to reorganize her army to suit the two powers. Ruling sovereign, Ahmed Shah Kajar (born 1898), son and successor of Mohammed Ali Shah, who abdicated July 16, 1909.

Upon the inquiry in the House of Commons on February 26, whether a new agreement had been reached between Great Britain and Russia as to the spheres of influence in Persia as arranged by the treaty of 1907, Mr. Balfour, Secretary for Foreign Affairs, said that the old convention was still in force. He added that no change would be made in it that would affect the integrity or independence of Persia.

PERU. A South American republic. The capital is Lima.

AREA AND POPULATION. The area of Peru is estimated at 1,769,804 square kilometres (683,335 square miles), which is about 22.6 per cent of the area of the United States. The number of inhabitants is not known, but is supposed to be about 4,500,000. Probably more than one-half are Indians; most of the remainder are mestizos. The estimated population of Lima is about 150,000; Arequipa, over 40,000; Callao (the chief port), 35,000; Cuzco, Ayacucho, and Iquitos, each 20,000; Iquitos (the Amazon port), 12,000 to 30,000, according to season.

EDUCATION. Elementary instruction is nominally but not actually compulsory. In 1916, there were 2296 primary schools, with 3304 teachers and 166,002 pupils enrolled; 3 normal schools, with 277 students; 54 colleges (secondary schools), of which 27 were national institutions, with 5202 students; university matriculates, 1791. The universities are situated at Lima, Cuzco, Arequipa, and Trujillo. The state religion is Roman Catholicism. Since November 11, 1915, the public exercise of other religious forms has been lawful.

PRODUCTION AND COMMERCE. The leading

crops are sugar cane, cotton, and rice. Other important products of the soil are rubber (in the northeast), corn, coffee, wheat, cacao, tobacco, and coca. The reported sugar output in 1915 was 2,628,410 metric quintals. Area under cotton in 1916, 55,635 hectares, producing 773,300 metric quintals. Rice production in 1915, 372,508 metric quintals; in 1916, 359,791; in 1917, about 462,000. Production of dried peas, beans, lentils, etc., in 1915, 197,141 metric quintals; in 1916, 191,564; in 1917, about 218,000. Alpaca, sheep, and llama wools are exported. Peru has rich mineral deposits, which have been its principal source of wealth. The chief metals mined are copper and silver. Among Latin-American countries, Peru ranks second to Mexico in the production of petroleum; the output in 1915 was 2,487,251 barrels and in 1916 2,550,645 barrels.

COMMERCE. Imports and exports have been valued as follows in libras (the Peruvian libra is equivalent to the pound sterling, which has a par value of $4.86656):

	1913	*1914*	*1915*	*1916*
Imports	.6,088,777	4,827,930	3,095,545	8,683,150
Exports	.9,137,780	8,767,790	14,128,072	16,541,063

In 1916, exports of agricultural products were valued at 6,787,635 libras; mineral products, 7,996,901 libras, including petroleum and mineral-oil products, amounting to 1,387,745 libras.

Imports and exports by principal countries, in thousands of dollars:

	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
United States	7,684	7,238	14,808	31,057
United Kingdom	6,503	3,220	15,912	17,601
Hongkong	628	884	....	....
Italy	980	767	50	93
Germany	3,144	465	1,599	....
Chile	486	459	6,499	14,852
France	758	483	743	898
British India	271	425	....	....
Netherlands	113	222	105	....
Spain	304	219	....	....
Belgium	1,335	147	397	....
Bolivia	....	....	402	911
Brazil	8	24	15	591
Panama	....	....	46	587
Total, incl. others	23,464	15,044	42,611	68,638

COMMUNICATIONS. Railway in operation, 2766 kilometres (1718 miles). For details, see 1916 YEAR BOOK. During 1917, a proposed railway from Payta to Maranon was before the Congress of Peru, and a group of capitalists visited the United States during the year to obtain capital for the enterprise.

Telegraphs: about 10,500 miles of line, with over 80,000 miles of wire and about 340 offices. Post offices, about 800. The inauguration of a wireless telegraph station at Cachendo December 8, 1917, completed wireless communication between the capital of the republic and the department of Içá, and Moquegua and the mountainous regions of Loreto and Madre de Dios; Lima now has wireless communication with Bolivia, Chile, Argentina, Paraguay, and Brazil, as well as with an extensive zone in the Pacific.

FINANCE. The legal standard of value is gold. The monetary unit is the libra (pound), equivalent to the pound sterling, the par value of which is $4.86656. Often the sol, one-tenth of the libra, is used as the unit of value. In 1916, revenue amounted to 3,942,384 libras, and expenditure to 3,193,609 libras. For 1917, estimated revenue and expenditure balanced at 3,412,237 libras. Estimated receipts in 1917 included: Import customs, 918,680 libras; direct taxes, 812,587; government monopolies, 774,500; export taxes, 296,890. Estimated expenditure in 1918, as submitted by the president to the Congress, 3,975,616 libras.

GOVERNMENT. The legislative power is exercised by a congress of two chambers, the Senate and the House of Representatives. Senators (52 in number) and representatives (116) are elected by direct vote for six years. The president, according to the constitution, is elected by direct vote for four years and is ineligible for the next term. The president in 1917 was José Pardo. He was elected August 10, 1915, by the Congress and was inaugurated August 18 to succeed the provisional president, Col. Oscar R. Benavides.

PETAIN, HENRI P. Chief of Staff of the French Ministry of War. Petain was born sixty-one years ago near Calais, and is a graduate of the St. Cyr military school. He is acknowledged as an expert tactician and strategist. By 1890 he was a captain in the élite Chasseurs à Pied. When the war started he was a colonel, but was almost immediately made a brigadier general and by September, 1914, he was made a general of a division. Seven months later he was in command of the 23rd Army Corps and took part in the Allied offensive in Artois. As a reward for meritorious service he was placed at the head of the Second Army, which he commanded during the Champagne offensive. He was in command of the French army at Verdun during the critical stages of the German drive in February and March, 1916. When Joffre retired it was thought by many military experts that Petain would succeed him. It is reported that the position was actually offered to him but that he demanded such sweeping authority that the politicians at Paris offered it to Gen. Nivelle instead. After the failure of the offensive along the Aisne and in Champagne, the French people's disappointment was registered in the removal of Gen. Nivelle and the appointment of Gen. Petain.

PETROLEUM. Preliminary estimates by the United States Geological Survey indicate that the quantity of petroleum produced and marketed in the oil fields of the United States in 1917 reached the record-breaking total of 341,800,000 barrels, a quantity nearly 14 per cent greater than the former record output of 300,767,158 barrels, established in 1916. The production is apportioned among the major fields as follows:

Field	*1916* *Barrels*	*1917* *Barrels*
Appalachian	23,009,455	24.600.000
Lima-Indiana	3,905,003	3.500.000
Illinois	17,714,235	15.900.000
Oklahoma-Kansas	115,809,792	147.000.000
Central and North Texas	9,303,005	11.000.000
North Louisiana	11,821,642	8.700.000
Gulf Coast	21,768,096	24.900.000
Rocky Mountain	6,476,289	9.200.000
California	90,951,936	97.000.000
Other fields	7,705	.....
	300,767,158	341.800.000

The salient features of the industry in 1917 were the record levels reached and firmly maintained by prices of crude oil at the wells and the enormous demand, which absorbed not only the current output of the wells, but necessitated a net draft of about 21,000,000 barrels on oil in storage, principally in California and Illinois. The surface reserve of crude oil in the United States at the end of 1917 is estimated at 153,000,000 barrels. The principal sources of new production in 1917 were Estill County, Ky., Butler County, Kan., Carter County, Okla., Wichita and Harris Counties, Tex., Converse County, Wyo., and Los Angeles County, Cal.

During 1917, the United States made new high records in export of various mineral oils for fulfilling the needs of the war. The gain in volume over 1916 was but 1½ per cent, but the value increase amounted to 25 per cent, showing the higher cost of gasoline, naphtha, and lubricating oils. There was a decrease for the year in the amount of illuminating oil and in the export of crude oil, the former being due to the loss of the German and Belgian trade, but the slight decrease in the crude oil export was more than compensated by the increased value. The shipment of various mineral oil products was under more direct control of the government as the oil tankers were operated directly by the government. The exports of mineral oils in 1917, as compared with other years, is given in detail below.

EXPORTS OF MINERAL OILS

	Illuminating Oil	*Lubricating Oil*	*Gasoline*	*Other Naphthas*	*Gas & Fuel Oil*	*Other Residuum Products*	*Crude Oil*
1917							
Gallons ..	652,729,138	280,984,891	242,488,286	173,770,628	1,121,451,576	688,240	171,258,309
Value	$48,548,224	$57,623,663	$58,512,466	$39,644,492	$46,014,951	$47,059	$7,680,368
1916							
Gallons ..	854,408,318	260,779,127	167,928,262	188,288,863	957,518,417	543,324	172,329,903
Value	$55,845,108	$43,022,468	$33,614,957	$35,055,589	$27,002,087	$161,436	$7,030,923
1915							
Gallons ..	836,998,731	239,719,488	112,560,475	169,770,999	799,646,143	2,616,712	158,263,069
Value	$49,947,273	$32,441,794	$13,162,990	$20,762,599	$22,010,458	$364,381	$4,282,827
1914							
Gallons ..	1,010,449,253	191,647,570	162,669,038	47,023,017	634,298,844	69,209,777	124,735,553
Value	$64,112,722	$26,316,313	$19,897,618	$5,390,801	$18,019,333	$1,204,917	$4,958,838

The total exports of mineral oils, as given in the above table, were as follows: for 1917, 2,645,362,368 gallons, valued at $253,027,075; 1916, 2,607,491,209 gallons, $201,732,563; 1915, 2,328,725,749 gallons, $142,941,069; 1914, 2,240,033,652 gallons, $139,900,587.

In normal times, the United States, Russia, and Mexico together produced nearly 90 per cent of the world's output of petroleum, the United States ordinarily being responsible for about 65 per cent. The Russian and Mexican oils, however, figure more extensively for fuel, being not of the class known as the "refinable crude petroleum," so that in the production of gasoline and naphtha by ordinary refinery methods, the oil from the United States is generally employed.

The British authorities during 1917 placed a tax of twenty-five cents a gallon on gasoline to be used in motor vehicles. The tax before the war was six cents per gallon. To use gasoline for private purposes, a permit from the proper authorities was required, and every effort was being made to restrict the consumption of gasoline in non-essential activities. It was reported that $2.50 a gallon was not an unusual price for gasoline.

See GEOLOGY, *Economic Geology*.

PHILIPPINES. AREA AND POPULATION. The total area of the islands is 115,026 square miles. The latest official census was taken in 1903, when the population was 8,265,348. The estimated population in 1917 was about 9,000,000.

AGRICULTURE AND COMMERCE. The industries of the country have their foundation upon agriculture, and the United States government, since its occupation of the islands, has endeavored to stimulate and foster agricultural development. The chief agricultural products are sugar, copra, hemp, tobacco, and rice. War conditions have seriously affected the foreign trade of the Philippines. This is shown chiefly in reduced imports. On the other hand, under the stimulus of war prices, which tended to increase production, exports continued larger than before. For the year ending December 31, 1916, the imports amounted to $45,496,338, which was nearly $4,000,000 less than the figure of the previous year, and was the smallest recorded since 1909. Even these figures do not fully measure the actual reductions in imports, when the general value of all kinds of imports is considered. The effect of the war and the increased local production of foodstuffs are shown in a steady annual decline in the general import trade from $53,000,000 in 1913 to $45,000,000 in 1916. On the whole the reduction in imports is to the economic advantage of the country. An exception to this is the reduction in the importation of iron and steel. This indicates a slowing down of the industrial development of the islands, and means especially a failure to import sugar machinery, which is essential to the development of the industry.

The export total of $69,937,183 for the year ending December 31, 1916, was by far the largest in the history of the islands. It is an increase of over $16,000,000 over the exports of 1915. This great increase, however, is due more to the increase in price than to the increase in production, although there was a decided increase in the production of sugar and tobacco during the year. There was no increase in hemp, while there was a decrease in the production of copra. On the whole the exports do not make a favorable showing for the agricultural development of the islands. The most favorable feature of the export trade was the increase in coconut oil, and the increased exportation of articles representing the smaller industries. The failure, largely, to increase the production of export staples,—sugar, hemp, copra, and tobacco,—is due to the lack of capital, and with increased capital there will develop an inadequate supply of labor, which in some manner, must be made up.

The total foreign trade of the islands for the first six months of 1917 exceeded by nearly $8,500,000 that of the corresponding months of the preceding year. The exports amounted to $38,441,818. Of this the sugar exports were valued at $6.148.528, coconut oil at $4,013,001, copra at $2,839,532. The hemp exports amounted to about $15,000.000. The exports to the United States amounted to $24,450,544. The total imports for the first six months of 1917 amounted to $27,012,211, compared with $20,525,271 for the corresponding period of 1916. The manufactures of cotton form the largest items of imports, and were valued at $7,425,644. The rice imports were valued at $2,370,797, and the manufactures of iron and steel at $2,062,540.

EDUCATION. There are about 5000 schools in the islands, with an average daily attendance of 480,000. A large proportion of the attendance is in the primary schools, but the intermediate or secondary schools have also made striking increases in recent years. Education is greatly on the increase among the non-Christians in the islands, and the legislature annually makes appropriations for the carrying on of this work. In this class of education, particular importance is attached to industrial or technical studies. In 1917 there were enrolled 300 teachers engaged among these tribes. Of these, only 14 were Americans. The legislature made an appropriation of about 5,000,000 pesos for schools. The University of the Philippines is an important institution for higher education. It has an enrollment of about 2000 pupils.

FINANCE. At the beginning of the fiscal year ending December 31, 1916, there was a balance in the treasury of $5,117,058. The total revenue amounted to $15,388,480, and the expenditures to $14,361,272, leaving a surplus at the end of the year of $6,532,130. The bonded indebtedness of the government, including the cities of Manila and Cebu, on June 30, 1917, was $20,125,000. Provision has been made for the return of these bonds on or before maturity. In January, 1917, negotiations were made for the purchase by the Philippine government of the Manila Railroad. By this transaction the government became the owner of all the stock of the railroad company, for which it paid $3,990,000. The bonds of the railroads guaranteed, as to interest, by the Philippine government, are the bonds of the Manila Railroad Company, $13,714,000, and the Philippine Railroad Company, $8,549,000.

HEALTH AND SANITATION. The Philippine health service continued efficient work in 1917. In 1915 there was created a council of hygiene with advisory functions, by which the health service is brought into closer consultation with the representatives of the people. During recent years there has been continued improvement in the general attitude of the people toward sanitation. Manila has been brought to the position of a modern city as far as sanitation and health are concerned, and serious effort has been made to improve sanitary conditions throughout the provinces.

CHARITIES AND CORRECTIONS. In 1916 a prison court was established at Bilibid Prison, for the trial of offenses against prison regulations and discipline. All the members of the court are prisoners.

POLITICS AND GOVERNMENT. There was little of political importance during the year. The legislature met and the chief and most important measures are noted in the section *Legislation* below. A decision, in relation to the status of the Filipinos in regard to American citizenship, was given by Judge Horace W. Vaughan of Hawaii, in January. The case was that of a Filipino resident of Hawaii who applied for American citizenship. This was denied on the ground that under the existing naturalization laws of the United States, no Filipino is eligible for American citizenship. This decision was directly contrary to the one made by Charles F. Clemons, who, in 1916, ruled that natives of the Philippines might become citizens of the United States. This decision induced many Filipinos in Hawaii to apply for citizenship, and three were naturalized before Judge Vaughan's decision had made such a step impossible. The reason given by Judge Vaughan for the rejection of the application was that of race. The naturalization laws were devised to prevent the naturalization of Asiatics, but while referring especially to Chinese and Japanese, it included, in his opinion, the Filipinos as well. In accordance with this decision, only aliens of the white race and those of African birth or descent could become American citizens.

Henderson S. Martin, vice-governor, and secretary of public instruction resigned on June 28, 1917, and was succeeded by Charles E. Yeater. Associate Judges Grant T. Trent and Sherman Moreland, of the Philippine Supreme Court, resigned on April 23, 1917, and were succeeded by Thomas A. Street and George A. Malcolm. The Philippine legislature provided for two additional judges in the Supreme Court, and the positions thus created were filled by Frederick E. Fisher and Ramon Avancena.

LEGISLATION. The National Congress did not consider any legislation exclusively affecting the Philippines in 1917. The Immigration Act applied to the Philippine Islands, but by a provision therein only until superseded by an act of the Philippine legislature on the subject. One of the important changes in the form of the Philippine government, made by the new organic law approved August 29, 1916, was the creation of an elective Senate to replace the Philippine Commission as the upper house of the legislature. The first election of senators was held on the first Tuesday of October, 1917, and on October 16, the new legislature met in its first session, whereupon the Philippine Commission ceased to exist. Among the measures enacted was one fixing the salaries of the more important officers and employees of the government. Divorce was also authorized in the island. The Militia Law was enacted, which followed in general the United States National Defense Act of 1916.

GOVERNMENT OFFICERS. Governor, Gen. Francis Burton Harrison, $18,000; Vice-Governor, Charles E. Yeater, $10,000; Secretary of Justice, Victorino Mapa, $6000; Secretary of Finance, Alberto Barretto, $6000; Secretary of Commerce, Dionisio Jakosalem, $6000; Secretary of Interior, Rafael Palma, $6000.

JUDICIARY. Chief Justice, Cayetano Arrelano, $8000; Associates: Florentino Torres, E. Finley Johnson, Adam C. Carson, Manuel Araullo, Geo. A. Malcolm, Thomas A. Street, Frederick E. Fisher, Ramon Avancena, $7500 each.

PHILLIPS, FORBES ALEXANDER. An English clergyman and author who wrote under the pen name of Athol Forbes, died May 29, 1917. He was born in 1866 and was educated at Durham University. Mr. Phillips held several livings, being vicar of Gorleston, Great Yarmouth, from 1893. He was also chaplain of several organizations. In 1895 he was a speaker at the Church Congress of that year. Among his writings, including the titles of several novels, are *Gorleston and its Parish Church, Some Mysteries of the Passion, Cassock and Comedy, A Son of Rimmon, Odd Fish, If Love Were All, The Romance of Smuggling, What Was the Resurrection?, Is Death the End?* His plays include *Her First Proposal, Church or Stage?, Lord Danby's Affair, A Maid of France, The Last Toast,* and *When it Was Dark.*

PHILOLOGY, CLASSICAL. For reasons noted in the YEAR BOOK for 1916, reasons which held with even greater force during 1917, this article will be confined almost wholly to American and English work in classical philology.

To the *Loeb Classical Library* (see YEAR BOOKS for 1911, 1912, 1913, 1914, 1915, 1916) were added, on the Greek side, translations of Achilles Tatius, by S. Gaselee; of the *Greek Anthology* (the second of five volumes), by W. R. Paton; of Dio Cassius (the fifth of nine volumes), by E. Cary; of Strabo (the first of eight volumes), by H. L. Jones. On the Latin side, there were added versions of Cæsar, *Gallic War,* by H. J. Edwards; of Seneca, *Tragedies,* in two volumes, by F. J. Miller; of Seneca, *Epistulæ Morales* (the first of three volumes), by R. M. Gummere. To the *Oxford Library of Translations* were added versions of Epictetus, *Discourses and Manual,* in 2 vols., by P. E. Matheson, and of Plutarch, *Selected Essays from the Moralia,* by A. O. Prickard.

It is a pleasure to note here a work entitled *Theophrastus and the Greek Physiological Psychology before Aristotle,* by George Malcolm Stratton, professor of psychology in the University of California. This contains an essay on "Theophrastus as Psychologist of Sense Perception, and as Reporter and Critic of Other Psychologists," the text and translation of Theophrastus' brief work, *On the Senses* (the first complete translation in English), and, finally, notes on the translation and the text.

In vol. xxxviii of the *American Journal of Philology,* edited by Professors B. L. Gildersleeve and C. W. E. Miller, were published "Pompeius Trogus and Justinus," R. B. Steele (an effort to prove that Trogus' history was not written until after Livy had published Books 80-96 of his great work, and that Justinus made his epitome of Trogus' work at Rome, in 144 or 145 A. D.); "Paulus Silenitiarius," B. L. Gildersleeve, an abstract, with running commentary, of a book on Paulus by an Italian scholar, Alessandro Veniero; "The Pronunciation of a Final Consonant When Followed by an Initial Consonant in a Latin Word-Group," F. F. Abbott; "Rhetorical Elements in Livy's Direct Speeches," H. V. Canter; "The Prosecution of Lifeless Things and Animals in Greek Law," W. W. Hyde; "Religious Burlesque in Aristophanes and Elsewhere," J. W. Hewitt; "On the Disposition of Spoil in the Homeric Poems," A. T. Murray; *Molle atque Facetum,* C. Knapp (an attempt to supply a simple explanation of Horace's famous dictum, in *Sermones* 1.10. 44, concerning Virgil); "The Plot of the Epidicus" (of Plautus), A. L. Wheeler; "Apophony and Rhyme Words in Vulgar Latin Onomatopoeias," A. J. Carnoy. Reviews of special importance in this volume are those of W. S. Fox, *Greek and Roman Mythology,* by F. G. Allinson; M. Edouard Cuq, *Une Statistique de locaux affectés à l'habitation dans la Rome impériale* (a study of the Roman *insulæ,* or apartment houses), by R. V. D. Magoffin; J. G. Winter, *The Prodomus of Nicolaus' Steno's Dissertation Concerning a Solid Body Enclosed by a Process of Nature Within a Solid* (referred to in YEAR BOOK for 1916), by M. W. Humphreys; L. Cooper, *A Concordance to the Works of Horace,* by C. W. E. Miller. In the department known as "Brief Mention," Professor Gildersleeve wrote, as usual, on a wide variety of topics. Useful summaries, again, were given of the contents of several foreign classical periodicals: of *Revue de philologie,* xxxviii-xxxix, by R. V. D. Magoffin; of *Rheinisches Museum,* lxx, No. 4, by C. W. E. Miller; of *Hermes,* xlviii, by H. L. Ebeling; of *Rivista di Filologia,* xliv (1916), Nos. 1-3, by K. F. Smith.

From *Classical Philology,* xii, edited by Paul Shorey, may be named "Notes on the Delphic Oracle and Greek Colonization," A. S. Pease; "Studies in Greek Noun-Formation: Dental Terminations," C. D. Buck; "The Campaign of Plataiai," R. J. Clark; "Latin Diminution of Adjectives," W. Petersen; "*ψυχρότης ἢ τὸ ψυχρόν*," L. Van Hook (the author holds that by *ψυχρόν* the Greek rhetoricians and literary critics meant what we call "fustian," by *frigus* and *frigidum* the Latin critics meant what we characterize as "frigid," "frigidity"); "Horace and Valerius Cato, ii-iii," G. L. Hendrickson (see YEAR BOOK for 1916: in the later parts of this paper the author tries to identify with the grammarian Valerius Cato the critic with whom Horace, in *Sermones* 1.10, was in fact or in fancy carrying on a controversy about Lucilius); "Kroll on the Independent Latin Subjunctive," C. E. Bennett (the author combats a paper by Kroll, in *Glotta,* vii, in which Kroll assailed the prevailing view that the Latin subjunctive had a true optative or wish use as distinct from the volitive use, or expression of will); "Beati Possidentes Ithakistæ," A. Shewan (a vigorous attack on Dörpfeld's identification of the Homeric Ithaca with the island of Leucas); "References to Painting in Plautus and Terence," C. Knapp; "Petronius and the Greek Romance," C. W. Mendell (an argument that Petronius' novel is not a realistic novel, but an erotic romance); "Hesiod's Description of Winter," A. J. Carnoy; "Ælius Gallus and the Reorganization of the Irrigation System of Egypt Under Augustus," W. L. Westermann; "On a Venetian Codex of Pliny's Letters," E. T. Merrill; "Demosthenes' Avoidance of *Breves,*" C. D. Adams (a discussion of a "law," laid down in 1893 by F. Blass, that Demosthenes avoided a succession of three or more short syllables: the author finds that the avoidance of *breves,* thus defined, is in fact a real characteristic of Demosthenes' style); "Etymology and the Golden Age," G. Norlin; "The Sources and Extent of Petrarch's Knowledge of the Life of Vergil," D. R. Stuart; "The Antecedents of Hellenistic Comedy," H. W. Prescott (of value to students of Plautus and Terence); "Land Reclamation in the Fayum," W. L. Westermann. Professor Shorey's contributions, in notes and reviews, are most varied and valuable.

From the *Classical Journal,* xii-xiii, edited by F. J. Miller, we mention "Concerning Cæsar's

Appearance," M. E. Deutsch; "The Messenger in Greek Tragedy," Julia H. Caverno; "An Apologetic for Xenophon's *Memorabilia*," W. W. Baker; "The Birthday as a Commonplace of Roman Elegy," Helen C. Bowerman; "Virgil: An Interpretation," M. S. Slaughter; "The Position of Women in the Late Roman Republic," Helen E. Wiegand; "The Close of the Odyssey," John A. Scott; "The Leaf-Ramsay Theory of the Trojan War," C. A. Maury (with replies by Dr. Leaf and Professor Ramsay); "An Alleged Blemish in the Antigone of Sophocles," H. D. Brackett; "Wit and Humor in Xenophon," S. E. Bassett; "Titus Labienus," F. F. Abbott (the paper deals with the career of Cæsar's famous *legatus*); "The Present Status of the Problem of Races in the Prehistoric Ægean Basin," A. E. R. Boak; "Cicero's Religious Beliefs," W. D. Hooper, and "Roman Knowledge of Jewish Literature," M. Radin.

From the *Classical Weekly*, ix-x, edited by C. Knapp, may be mentioned "Primitive Wooden Statues Which Pausanias Saw in Greece," Florence Bennett; "The Itineraries," T. A. Buenger; "Cæsar as Seen in His Works," G. Lodge; "Notes on Meters," M. W. Humphreys; "More Modern Versions of the Harmodius Hymn," D. M. Robinson; "The Consular Speeches of Cicero," Catharine Saunders; "Caesar, *De Bello Gallico*," T. Rice Holmes, A. R. Wightman, and C. Knapp (see YEAR BOOK for 1916); "Cæsar, B. G. 2.8," C. Knapp; "The Plebs Urbana in Rome," E. A. Schnabel; "The Profits of Literature in Ancient Rome," E. T. Sage; "Determined Futurity in Greek," F. H. Fowler; "Vergil and Nature," Mabel Root; "Chronology of the Reigns of the Cæsars," R. W. Husband; "The Boy Ascanius," H. O. Ryder (a study of the rôle played by Ascanius in the *Æneid*); "Roman Factories," F. W. Wright; "Epithets of the Tiber in the Roman Poets," V. J. Warner; "Literature and Liberalism," N. G. McCrea; "The Economic Interpretation of Roman History," T. Frank; "Professionalism in Greek Athletics," C. A. Manning. Important reviews in this periodical were those of J. W. White, "The Scholia on the Aves of Aristophanes," by G. E. Howes; C. C. Conrad, "The Technique of Continuous Action in Roman Comedy," by R. C. Flickinger; L. Bloomfield, "An Introduction to the Study of Language," by G. M. Bolling; W. M. Lindsay, "A Short Historical Latin Grammar," by R. G. Kent; C. W. Mendel, "Latin Sentence Connection," by H. C. Nutting.

In vol. xlvii of the *Transactions of the American Philological Association* we find, besides other papers, these: "Suetonius and Cæsar's German Campaigns," M. E. Deutsch; "Municipia Fundana," J. Elmore, an inquiry, connected with Cicero's oration *Pro Balbo*, into the nature of certain municipia; "On the Virgilian *Catalepton II*," H. R. Fairclough (the author sees in this piece an elaborate *double entendre*, girding at T. Annius Cimber for his love of archaic words and old spells); "Plot and Character in Greek Tragedy," A. T. Murray; "Comparative Philology and the Classics," C. D. Buck; 'Η Ολολυγών—What was it?," S. G. Oliphant (the author seeks to trace the semantic history of the Greek word ὀλολυγών and to show the essential unity of meaning underlying all instances of its occurrence); "The Monophthongization of Latin *æ*," E. H. Sturtevant (an argument against certain recent papers by various scholars which attack the view, long held, that in standard that *æ* was a diphthong; the author holds that *æ* was pronounced as *ai* is in English *aisle* down at least to the latter half of the second Christian Century); "Three as a Magic Number in Latin Literature," E. Tavenner; "Compound Adjectives in Early Latin Poetry," Cornelia C. Coulter; "The Origin of Greek Tragedy in the Light of Dramatic Technique," D. R. Stuart; "Illogical Idiom," Paul Shorey.

Harvard Studies, xxviii, contained three papers: "On the Second Book of Aristotle's Poetics and the Source of Theophrastus' Definition of Tragedy," A. P. McMahon (an attempt to explain away the ancient statements to the effect that there was a second book of Aristotle's Poetics, and to show that Theophrastus derived his definition of tragedy from Aristotle's dialogue *On Poets*, one of the lost "exoteric" works of Aristotle); "A History of Exposition in Greek Tragedy," Evelyn Spring; and "Chaucer's Lollius," G. L. Kittredge (an argument that Chaucer believed, perhaps on the basis of Horace, *Epistles* 1.2.1-2, that a Roman named Lollius was author of a lost work on the Trojan War, and that he pretended to be translating this Lollius in his *Troilus*, expecting his readers, however, to see through this transparent literary device, and to realize his indebtedness to Boccacio).

In the *Bulletins* published under the auspices of various universities appear, from time to time, papers that fall within the field of classical philology. We name here "Gaius Verres: an Historical Study," F. H. Cowles, in *Cornell Studies in Classical Philology*, xx; "The Stratulax Scene in Plautus' *Truculentus*," E. W. Fay, in *University of Texas Bulletin, Memorial Volume to Shakespeare and Harvey;* "St. Severinus and the Closing Years of the Province of Noricum," C. C. Mierow, in *Colorado College Publication, Language Series*, ii; "Reflections on Rereading Vergil," E. H. Dutton, *Bulletin of Tennessee College;* "Horatian Criticism of Life," N. G. McCrea, and "Archæology as a Liberal Study," T. L. Shear, in *Columbia University Quarterly;* "Studies in Polyptoton in the Hexameters of Ovid, Lucretius, and Vergil," Elizabeth Breazeale, "Polyptoton in Tibullus and Propertius," George Howe, and "The Constitutional Position of the Roman Dictatorship," C. W. Keyes, in *The University of North Carolina Studies in Philology*.

In Volume xiii of the *University of Michigan Studies, Humanistic Series*, appeared an account of "The Old Testament Manuscripts in the Freer Collection, Part II: The Washington Manuscript of the Psalms," by Henry A. Sanders. This is one of the four Biblical manuscripts purchased, in 1906, by Mr. Charles L. Freer, of Detroit, from an Arab dealer in Gizeh near Cairo. Professor Sanders had previously published, as parts of this volume of the *University of Michigan Studies*, "Old Testament Manuscrips in the Freer Collection, Part I: The Washington Manuscripts of Deuteronomy and Joshua" (1912), and "The New Testament Manuscripts in the Freer Collection, Part I: The Washington Manuscripts of the Four Gospels" (1912).

If space permitted, a wide array of papers could be named from periodicals which are in no sense especially devoted to the cause of the classics. Some hint of the richness of this material can be gained by a study of the contributions to the *Classical Weekly* labeled "Classical Articles in Non-Classical Periodicals," by H. H. Yeames and W. S. Messer, and of the contributions to the *Classical Journal*, under the caption "General Comment," by G. C. Scoggin. Mention may be made here of "Greek Ideas of an Afterworld," O. O. Norris, in *The Monist;* "Virgil and the New Patriotism," Anne C. E. Allinson, in the *Yale Review;* "Propertius: A Modern Lover in the Augustan Age," K. F. Smith, in *Sewanee Review;* "The Assault on Humanism," Paul Shorey, originally printed in the *Atlantic Monthly*, but later issued as a separate pamphlet; "Climatic Change and Agricultural Exhaustion as Elements in the Fall of Rome," E. Huntington, in *Quarterly Journal of Economics;* "The Trades of Antiquity as a Field of Investigation," W. L. Westermann, in *American Historical Review*.

How sadly the great war has interfered with scholarly activity in England may be seen by an examination of such leading English classical periodicals as the *Classical Quarterly* and the *Classical Review*, especially by noting how meagre the "Summaries of Periodicals," in the former periodical, now are as compared with those published there in 1914 and earlier. The volume known as *The Year's Work in Classical Studies* (see YEAR BOOK for 1913) gives similar testimony.

From the *Classical Quarterly*, ix, we may mention "Adnotanda in Latin Prosody," J. P. Postgate; "Notes on Seneca *Epistulæ Morales*," R. L. Dunbabin; "The Affatim Glossary and Others," W. M. Lindsay; "The Kingship of Agamemnon," A. Shewan; "Some Passages of Greek Tragedy," A. C. Pearson; "Codex Cantabrigiensis of Livy," Florence Whitehead; "On the Date of the Trial of Anaxagoras," A. E. Taylor; "The Fates, the Gods, and the Freedom of Man's Will in the *Æneid*," L. E. Matthaei; "The *Thyestes* of Varius," A. E. Housman. From the *Classical Review*, xxxi, we name "Consular Provinces between 67 and 52 B. C.," E. G. Hardy; "The Poet of Italy," R. S. Conway (observations on Virgil, approving and supplementing points made by W. Warde Fowler, in his essay *Virgil's "Gathering of the Clans," being Observations on Aeneid vii. 601-817*); "The Homeric Hymns," T. L. Agar; "Dogmatic Diviners and Propertius," J. S. Phillimore (notes on Propertius); "Duplicated Altars and Offerings in Virgil," W. Warde Fowler.

Interesting indications of the classical interests of younger scholars, as well as of their instructors in various universities, can be gained from the following list of dissertations published within the year: Emily H. Dutton, *Studies in Greek Prepositional Phrases;* J. L. Hancock, *Studies in Stichomythia;* Emily L. Shields, *The Cults of Lesbos;* Eliza G. Wilkins, *"Know Thyself" in Greek and Latin Literature;* Mary E. Armstrong, *The Significance of Certain Colors in Roman Ritual;* Ethel H. Brewster, *Roman Craftsmen and Tradesmen of the Early Empire;* W. J. Keller, *Goethe's Estimate of the Greek and Latin Writers;* R. H. Lacey, *The Equestrian Officials of Trajan and Hadrian: Their Careers, with Some Notes on Trajan's Reforms;* K. Preston, *Studies in the Diction of the Sermo Amatorius in Roman Comedy;* E. Tavenner, *Studies in Magic from Latin Literature;* and Mary R. Thayer, *The Influence of Horace on the Chief English Poets of the Nineteenth Century*.

It remains now to set down the names of some books that have come to the writer's attention. The *Apologeticus* of Tertullian, hitherto not readily acessible to students, has been edited, with introduction, notes, and a translation, by J. E. B. Mayor and A. Souter. A valuable work is an edition, in three volumes, of the fragments of Sophocles, by A. C. Pearson: see reviews of the work, by G. C. Richards, in the *Classical Review*, and by P. Shorey in *Classical Philology*. Other works are A. Piganiol, *Les Origines de Rome* (No. 110 of the *Bibliothèque des Écoles Françaises de Rome et d'Athènes*); E. S. Bouchier, *Sardinia in Ancient Times;* C. Delisle Burns, *Greek Ideals: A Study of Social Life;* L. Cooper, *The Greek Genius and Its Influence*, a collection of select essays and abstracts, "meant to supply a part of the necessary background for the study of Greek and Latin masterpieces in standard English translations, and to stimulate and rectify the comparison of ancient with modern literature"; C. E. Robinson, *The Days of Alkibiades;* J. R. Harris, *The Ascent to Olympus*, speculations as to the earliest forms from which four of the Olympian deities, Dionysus, Apollo, Artemis, and Aphrodite, were derived; W. Warde Fowler, *Æneas at the Site of Rome;* J. F. D'Alton, *Horace and His Age: A Study in Historical Background;* G. De Sanctis, *Storia dei Romani, iii*, dealing with the age of the Punic Wars (reviewed by F. F. Abbott, in *The American Historical Review*); F. W. Parker, *Historical Introduction to the Roman Law;* J. C. Hoppin, *Euthymides and His Fellows;* E. H. Sturtevant, *Linguistic Change;* C. W. Mendell, *Latin Sentence Connection* (reviewed by H. C. Nutting, in the *Classical Weekly*); H. I. Bell, *Catalogue of Greek Papyri in the British Museum, v;* James Loeb, *The New Greek Comedy*, a translation of the fine work by Ph. E. Legrand, called *Daos*, a general account of the New Attic Comedy (see YEAR BOOK for 1910). The final volume, covering T—Z, with Indexes, of Daremberg and Saglio, *Dictionnaire des Antiquités Grecques et Romaines* appeared.

Finally, we may go a little further afield by mentioning W. W. Jackson, *Ingram Bywater: The Memoir of an Oxford Scholar;* H. Browne, *Our Renaissance: Essays on the Reform and Revival of Classical Studies;* R. W. Livingstone, *A Defense of Classical Education* (1916). The Society for American Fellowships in French Universities brought out a most interesting volume entitled *Science and Learning in France, With a Survey of Opportunities for American Students in French Universities*. The primary purpose of the volume was "to put before the American public the contributions of France in all fields of scientific knowledge, and to show her status in the forefront of the world's progress." Of special interest to readers of this article will be the sections dealing with "Archæology," by G. H. Chase, H. N. Fowler, A. L. Frothingham, J. R. Wheeler; and the sections treating "Classical Philology," by W. G. Hale, E. K. Rand, and John A. Scott. But in many other fields treated in the book the lover of classical studies will find much to interest him, in the evidence presented of the abiding interest of Frenchmen in all the varied fields of classical philology and of the substantial contributions made by them within those fields.

PHILOLOGY, Modern. The study of philology sustained a severe loss during 1917 in the death of Paul Meyer, who, in collaboration with Gaston Paris, founded *Romania*, the leading review devoted to Romance studies. Meyer exerted a powerful influence on the development of the study of philology in France during his long and active career. With him, according to Professor Raymond Weeks, author of his obituary in the *Romanic Review* (vol. viii, p. 352), "commences for France the glorious period of the application of scientific principles to Romance philology and to the early history of the Romance literatures." Without the sound method he imparted to his pupils, the remarkable progress of the new school, with which, however, he was not entirely in sympathy, would not have been possible.

In our review of last year we called attention to the importance of *La Science française* to which many of the leading scholars of France contributed brief sketches. During the past summer the Society for American Fellowships in French Universities issued a work of similar nature entitled *Science and Learning in France*, including a survey of opportunities for American students in French universities. This beautiful volume, dedicated to the "scholars of France-worthy custodians of their country's intellectual greatness," was prepared under the general direction of Dean John H. Wigmore of the Faculty of Law of Northwestern University. Among the numerous subjects discussed therein ample space is reserved for philology under which we find the following subdivisions: *Classical*, *Romance*, *Oriental*, *Semitic*, and *English*. The section devoted to Romance philology was drafted by Professors C. H. Grandgent of Harvard University, H. R. Lang of Yale University, Kenneth McKenzie of the University of Illinois, and Raymond Weeks of Columbia University. After a brief sketch of the history of Romance philology in France, there is given much needed information relating to instruction at Paris as well as at the various provincial universities. Along with the names of the most distinguished professors in these institutions is supplied a brief bibliography of their leading publications. The same is true of Oriental Philology, the outline of which was drafted by Professors F. Edgerton of the University of Pennsylvania, E. W. Hopkins of Yale University, and C. R. Lanman of Harvard University; and English Philology of which the drafting committee consisted of Professors A. C. L. Brown of Northwestern University, R. W. Brown of Wabash College, and J. L. Lowes of Washington University. The volume closes with three appendices, the first of which is devoted to the educational advantages for American students in France, by Professor J. Geddes, Jr., of Boston University, the second to institutions of higher learning, their organization, degrees, requirements, fees, etc., by Professor C. H. Vibbert of the University of Michigan, and the last to practical suggestions to the intending graduate student, by the same. Unfortunately these appendices are not brought entirely up to date. The work contains numerous illustrations consisting principally of portraits of well-known scholars. In a word, this volume is not only a fitting tribute to French science whose great value is beginning to be tardily recognized, but should prove of incalculable service to all those who will be seeking instruction in foreign lands after the close of the great war.

The entrance of the United States into the world conflict has perforce drawn our attention to the practical study of the French language. In order to meet the needs of our soldiers and others engaged in war-work in France a large number of language manuals have appeared. Before discussing these publications, it behooves us to note the remarkable growth of the French military technical language during the past three years. Already in 1899 Col. C. De W. Willcox called attention, in the preface to his *French-English Military Technical Dictionary*—of which a new edition with a supplement has recently been published (Washington, Gov't Printing Office, 1917)—to the fact that "with French alone an officer can keep abreast of his profession almost as well as though he had at his command all the other foreign languages whose military literatures are important in a professional point of view." But notwithstanding its excellence for that time, this thoroughly scientific work is naturally deficient with regard to the terminology now in vogue. The language has kept so closely in touch with new inventions and departures in military science that though at that date the above-mentioned author emphasized "the extremely detailed nature of technical French nomenclature," to-day it is in many respects almost wholly neologistic. Thus the terminology relating to aviation contained in his dictionary is limited to *aviateur*, *aviation*, and the archaic *avire*, meaning "flying machine." In 1917 V. W. Pagé, and P. Montariol issued a *Glossary of Aviation Terms* (N. Y.), consisting of ninety-four pages. The same is almost as true of certain other subjects. In view, therefore, of the above considerations, it may be of interest to the general reader to list some of the manuals that are most widely used. Among the first to be placed on sale in the United States was the official French manual of the British army, the *Vade-Mecum* by E. Plumon (London, 1917). It is almost needless to say that this is one of the most complete, from the technical point of view, now in use. Probably the first work of this nature to be published in America is the semi-official manual of the Anzacs, entitled *Soldiers' Spoken French*, by Hélène Cross (N. Y.). The great advantage of this little publication lies in the clear and attractive way in which the subject is approached. and also in the fact that the binding is waterproof and of such a size that it will fit the pocket of a uniform. Unfortunately publishers have often overlooked these last two important details. Its greatest defect consists in the peculiar phonetic-method used for indicating pronunciation. The *English-French Hand Book*, issued by the National Security League (N. Y.), is very useful, notwithstanding inexplicable errors and lack of system in its preparation. What may be called the best manual published in America is *War French* by Col. C. De W. Willcox (N. Y.), in which the elements of French are presented in such a way that the reader can speedily acquire a working knowledge of the language. It is divided into three parts. namely, the French language, the French army. and passages for translation with serviceable vocabularies. Thanks to the experience of the author, this comprehensive manual attains to an accuracy in the matter of scientific and military terms in use in France that is not characteristic of most works of this nature. Special mention should be made also of four publications of the Univ. of Chicago Press entitled *First Lessons in Spoken French for Men in Military Service*, by Wilkins, Coleman, and Huse; *First Lessons in Spoken French for Doctors and Nurses*, by Wilkins, Coleman, and Preston; *Le Soldat Américain en France*, by Coleman and La Meslée; and *Army French*, by Wilkins and Coleman (1918). The last mentioned is of especial interest, as it is probably the best and most serviceable introductory manual yet issued. The writer of these lines used *Le Soldat Américain en France*, which is entirely in French, with success last summer at the U. S. Aviation Camp at Mineola, L. I. The *Cortina French-English Military Manual*, by J. A. Picard (N. Y.) is a pretentious work, though not always accurate. It contains a good map of France and much detailed information. Among other manuals that should be noted are the *Cortina French-English Red Cross Instructor*, by the same author; *Oxford English and French Conversation Book for Army and Navy Men*, by R. S. Kidd and Lieut. C. L. Cabot (Boston), containing good word-lists and a strange and inaccurate method of phonetic notation; *The Soldiers' English and French Conversation Book*, by W. M. Gallichan (Phila.), unsystematic and often inaccurate, with a method of indicating pronunciation that would cause a Frenchman to marvel at his own tongue; *Rapid-Fire English, French, German*, containing a large number of slang words, most of which are archaic, and a brief sketch of the last hundred years of French history; *What You Want to Say and How to Say It*, by W. J. Hernan (N. Y.), a useful manual marred by an unpronounceable method of phonetic notation; *Hospital French*, by E. Perrin (N. Y.); *Parley Voo'll*, by Col. F. N. Maude and F. Scudamore (New Haven, Conn.); *International Conversation Book, English, French, German* (Phila.), with a barbarous method of indicating pronunciation; *French for Soldiers*, by A. F. Whittem and P. W. Long (Cambridge), with the collaboration of officers of the French Military Mission; *Simplest Spoken French*, by W. F. Giese and B. Cerf (N. Y., 1918), a very complete general manual; *Handbook of English and French Terms*, by G. Chinard and E. R. Hedrick (Berkeley, Cal.), intended for the use of relief workers in France; *Conversational French*, by F. R. Le Roux, issued by the Camp Dodge Y. M. C. A.; and a manual of artillery terms announced by Yale University. The *Soldier's Service Dictionary*, by F. H. Vizetelly (N. Y.), contains a well-edited selection of some ten thousand words, while the *Dictionary of Aviation*, by R. N. Pierce, is said to include 4276 title-words and phrases.

In general from the philological point of view the year has not been very productive. Although there are several works which deserve our serious consideration, lack of space forbids us from going further into detail than to mention the most important titles with a word of commendation or criticism here and there. Where no date is given the reader will understand that the work appeared in 1917.

GENERAL. E. H. Sturtevant's *Linguistic Change* (Chicago) is an excellent general introduction to the historical study of language. G. Maspéro's *Introduction à l'étude de la phonétique égyptienne* (Paris) was in press at the time of the death of its famous author. (For his obituary, see NEW INTERNATIONAL YEAR BOOK, 1916, p. 407). A. Werner's *The Language-Families of Africa* (London) supplies all the most recent information relating to many of these little known tongues. In American-Indian we have two important contributions: *The Position of Yana in the Hokan Stock* (Berkeley, Cal.) by E. Sapir, an author of prodigious activity whose many valuable studies are generally noted in these columns, and *Siuslawan (Lower Umpqua)*, consisting of an illustrative sketch, by L. J. Frachtenberg (Washington). H. Beuchat's *Manuel d'Archéologie américaine* (Paris), devoted to extinct civilizations of pre-historic America, and Katharine B. Judson's *Myths and Legends of British North America* (Chicago) should not, however, be overlooked. Of a more practical nature are R. Blanchard's *La Mimophonie, son rôle dans la formation des langues* (Paris) and T. F. Cummings's *How to Learn a Language* (N. Y.).

INDO-IRANIAN. Of great value to the English-speaking student is the translation from the second German edition of A. Weber's *History of Indian Literature* (N. Y.) by John Mann and Th. Zachariae. A. A. Macdonell's *Vedic Grammar for Students* (Ib.) is intended especially for beginners, whereas his other work, issued in 1910, was prepared as a reference-grammar for advanced students. Two important additions to the extensive bibliography of Hindu religion are A. Coomaraswamy's *Buddha and the Gospel of Buddhism* (Ib.) and H. Whitehead's *The Village Gods of India* (Ib.). In Avestan we have F. A. Cannizzaro's *Il Vendidad reso italiano, sul testo zendico di C. F. Geldner* (Messina, 1916), a carefully prepared Italian translation.

SLAVIC. Of a general nature are J. M. Campbell's *Selected List of Russian Books* (Chicago, 1916), which was compiled for the Free Library Commission of Mass., and F. R. Livesay's *Songs of Ukraina* (N. Y., 1916). In our last review we called attention to a number of manuals of the Slavic languages of interest to soldiers. To that list may be added the following: Russian: Olga Klionoff, *Correspondance commerciale et mondaine russe* (Paris), E. Rochelle and W. Rosenstein, *Le Franco-Russe* (Bordeaux, 1916), F. Asnaourow, *Le Russe par vous-même* (Paris, 1916), J. H. Freese, *New Pocket Dictionary of the English and Russian Languages* (London, 1916), and O. Klionoff and L. Thomeret, *4000 verbes russes classés en 160 séries* (Paris). Serbian: D. Vékovitch, *Manuel de conversation serbe-français* (Ib.), and E. Rochelle and D. Tamindjitch, *Le Franco-Serbe* (Bordeaux, 1916). Polish: *Manuel de langue polonaise* (Paris, 1916), by Iza Zielinska. Bulgarian: *Vocabulaire bulgare-français* (Paris) and NEW INTERNATIONAL ENCYCLOPÆDIA, vol. iv, pp. 141-2.

CELTIC. Works of general interest relating to this field are L. A. Fischer's *The Mystic Vision in the Grail Legend and in the Divine Comedy* (N. Y.), P. Foley's *Irish Historical, Curious Customs and Superstitions, County of Kerry, Corkaguiny* (Oakland, Cal., 1916), and P. Van Tieghem's *Ossian en France* (2 vols., Paris), which, though touching philology only indirectly, is an excellent example of the breadth of French erudition. The *Catalogue of the Bradshaw Collection of Irish Books in the Univ. Library Cambridge* (Cambridge, 3 vols., 1916) is also important. A. L. Humphrey's *Handbook to County Bibliography* (London) is a most useful bibliography relating to counties and towns of Great Britain and Ireland.

English. Of a purely philological nature are E. Einenkel, *Geschichte der englischen Sprache* (3rd ed., Strassburg, 1916), devoted to historical syntax, and J. M. Steadman, *The Origin of the Historical Present in English* (Chapel Hill, N. C.). In Anglo-Saxon was issued the fourth edition of J. W. Bright's popular *Anglo-Saxon* Reader (N. Y.), J. E. Wells's *Manual of the Writings in Middle English 1050-1400* (New Haven, 1916) deserves mention. An addition to the extensive bibliography on Chaucer is contained in B. F. Jefferson's *Chaucer and the Consolation of Philosophy of Boëthius* (Princeton). Eleanor H. Adams's *Old English Scholarship in England from 1566 to 1800* (New Haven) is likewise of general interest. A new anniversary edition of Crabb's *English Synonyms* (N. Y.) was issued. The following parts of the Oxford English Dictionary made their appearance: Vol. ix, *Sullen-Supple*, by C. T. Onions (January); vol. xi, *Verifactory-Visor*, by W. A. Craigie. Of the *Surnames of the United Kingdom*, by H. Harrison (London), parts 17 and 18 of vol. ii were published.

Scandinavian. The fourth fasciculus of the third part of A. Kock's *Svensk Ljudhistoria* (Lund, 1916) was an important contribution.

German. A. Meillet's *Caractères généraux des Langues germaniques* (Paris) is but another addition to the list of great works by this scholar (see our review of last year). Of an elementary nature is E. Prokosch's *The Sounds and History of the German Language* (N. Y.). The third edition of J. Wright's excellent textbook, *Middle High German Primer* (Ib.), is of use. Of a more special nature is R. M. Ihrig's *The Semantic Development of Words for "Walk, Run" in the Germanic Languages* (Chicago, 1916). R. Delcourt's *Expressions d'argot allemand et autrichien dans les tranchées* (Paris), and A. Fontaine and Th. Ioran's *Méthode rationelle et pratique de langue allemande* (Ib.) are good manuals. Of importance for those engaged in censoring letters is J. Stadler and Ch. Amandruz, *Cours de correspondance commerciale allemande à l'usage des écoles de commerce* (Lausanne).

French. General works of great importance are L. Clédat's *Manuel de phonétique et de morphologie historique du français* (Paris), A. Blanchet and A. Dieudonné's *Manuel de numismatique française* (Ib.), of which volume ii is devoted to the history of the royal coinage from Hugh Capet to the Revolution, and H. Leveillé's *Dictionnaire inventoriel de la flore française* (Le Mans, 1916). A new edition of A. Haase's *Syntax française du dix-septième siècle*, translated by M. Obert, appeared at the close of 1916 (Paris). Technical studies include F. J. Tanquerey, *l'Evolution du verbe anglo-français aux XIIIe et XIVe siècles* (Ib.), A. R. Rose, *Germanische Lehnwörter im Französischen* (Zwickau), and P. Lauer, *De la Signification du mot France aux époques mérovingienne et carolingienne* (Paris, 1916). C. Nyrop's beautiful tribute *France* (trans. by J. de Coussange, Paris, 1916) and Abbé Delfour's *La Culture latine* (Ib.), while not philological, are of the greatest interest. Among studies of dialects the most important are two works by O. Bloch, *Lexique français-patois des Vosges méridionales* (Ib.) and *Les Parlers des Vosges méridionales* (*arrondissement de Remiremont*) (Ib.), and A. Putois, *Usages locaux du Mâconnais* (Mâcon). Mary M. Wood's *Spirit of Protest in Old French Literature* (N. Y.) is of especial interest at the present time. The following manuals may be noted: G. Derval, *Petite Grammaire française* (Paris), C. M. Marchand, *A Careful Selection of Modern Parisian Slang, including the new argot des tranchées* (Paris), Larousse, *Dictionnaire des Termes militaires et de l'argot poilu* (ib.), and E. Levi, *Grammatica razionale della Lingua francese* (Leghorn, 1916). A good etymological and historical dictionary is the *Grand Dictionnaire français-italien et italien-français* of C. Ferrari and J. Caccia (Paris). While not within the scope of this review, attention should be called, nevertheless, to the great undertaking of the Public Library of Lyons, entitled *Contribution à une Bibliographie générale de la Guerre de 1914*, of which six *fascicules* (240 pp.) have appeared (Paris).

Spanish. A most important contribution to the study of the old Spanish language and literature is F. de Onis's *Fray Luis de Leon* (Madrid, 2 vols., 1914-17). Other works of somewhat similar nature are V. Castañeda y Alcover, *Catálogo de los manuscritos lemosines ó de autores valencianos* (Madrid, 1916), MSS. contained in the Escorial Library, P. A. Pleye, *Santa María de Salas en el siglo XIII* (Bilbao, 1916), and L. Miner's *Modificaciones del Idioma castellano en Cuba* (Havana, 1916). J. V. Sanchez Bruno's *Gramática comparada anglo-española* (Valencia) and J. Goizveta y Días's *Sea y Fuere, Fuera, Sería y Fuese* (Barcelona, 1916), relating to the use of these forms, are cited *à titre de curiosité*. The following two dictionaries may be included: J. Alemany y Bolufer, *Diccionario de la Lengua castellana* (Barcelona), which is said to contain many thousand more words than found in the dictionary of the Academy, and Noble's *Large Type Spanish-English and English-Spanish Dictionary* (N. Y., 1916). For commercial Spanish the student is referred to P. Lourtau, *Curso de Español comercial* (Paris) and J. Laborde, *Nouveau Manuel de correspondance commerciale en français et en espagnol* (Ib.). A good introductory manual is *Spanish for Soldiers*, by J. A. Moss and J. W. Lang (Menasha, Wis.).

Catalan. H. C. Heaton's *The Gloria d'Amor of Fra Rocabertí* (N. Y.) is an excellent edition of a famous Catalan vision-poem of the fifteenth century.

Italian. General works are E. Monaci, *Studi romanzi* (Rome), G. Bertoni, *Poesie, Leggende, Costumanze del Medio Evo* (Modena), G. Malagoli, *Crestomazia per Secoli della Letteratura italiana* (3 vols. Florence, 1916), and P. Ortiz, *Per la Storia della Cultura italiana in Rumania* (Bucarest, 1916). Among dictionaries we note G. Cappuccini, *Vocabolario della Lingua italiana* (Turin), M. Zingarelli, *Vocabolario della Lingua italiana* (Milan, 102 fasciculus), G. F. Lisanti, *Dizionario moderno italiano-inglese* (N. Y.), E. Webber, *Dizionario tecnico in Quattro Lingue: Inglese, Italiano, Tedesco, Francese* (2d ed., Milan), and M. Sforza and A. Cervati, *Il Piccolo Dizionario dell'Infermiera* (Milan, 1916). The following manuals are of interest: A. Prati, *L'Italiano e il Parlare della Valsugana* (Rome, 1916), intended for teachers, Lina Merlo and Ed. Paris, *L'Italiano e l'Italia* (Paris), and T. Vallesi, *Arma la Prora* (Palermo), a nautical text-book.

PHONETICS. Of a general nature are J. Chabert and Labernadie, *Les Vices de prononciation et leur correction* (Paris, 1916), with emphasis on the medical side, and G. de Parrel, *Précis d'anacousie vocale et de labiologie* (Ib.), an interesting introduction to auditive education. In English the leading publications are H. E. Palmer's *First Course of English Phonetics* (Cambridge), W. Rippmann's *Sounds of English* (London, 1916), thoroughly revised, W. A. Craigie's *Pronunciation of English* (Oxford), in which the pronunciation is reduced to rules by a system of marks applied to ordinary spelling, and D. Jones's *An English Pronouncing Dictionary* (N. Y.). To the French bibliography the following addition was made: A. W. Ballard and E. Tilly, *Phonetic French Reader* (Ib., 1916).

PHILOSOPHY.* There are numerous and almost unmistakable signs that 1917 marks a turning point in the history of philosophy. It has been a critical year in many respects. In respect of the war it has marked a crisis, and coincident with, perhaps incident to this crisis, have come crises in our political, social, moral, and religious institutions, and these seem to be reflected to a marked degree in the ideas which these institutions embody.

The first two numbers of the *Philosophical Review* seem symbolical of this fact. The first number is devoted to a retrospect, the second contains Professor Lovejoy's presidential address before the American Philosophical Association, December, 1916, "On Some Conditions of Progress in Philosophical Inquiry." The retrospect was occasioned by the twenty-fifth anniversary of the *Review*, and consists of a "series of contributions to a survey of the progress of philosophy in some of its main departments since the foundation of the *Review*." These articles are contributed by Messrs. Bosanquet, Sabine, Tufts, and Miss Washburn. In this connection André Lalande's survey of "Philosophy in France, 1916" (*Phil. Rev.*) should be mentioned. Over against this retrospect stands Prof. Lovejoy's address, which is prospective. What is especially significant about it is that it presents progress as a problem, as a goal of conscious endeavor. He is conscious of the scientific impotence of most of our "modern" philosophy. Philosophising, because it has been largely undisciplined, is contentious rather than scientifically productive. Prof. Lovejoy pleads for the development of a technique of coöperative inquiry. There is a great deal of irony about the whole plea, for its immediate result was to call forth fresh contention, and not coöperation. The discussion which followed (v. *Phil. Rev.*), however, marks the conscious recognition of an important fact, viz., that philosophy to-day is a curious mixture of "the art of philosophising" and of a number of scientific (psychological, logical, metaphysical) problems for *inquiry*. To quote Prof. Lovejoy: "I can conceive of no rule of philosophic method more primary than that the philosopher should always be perfectly clear in his own mind when philosophising, as to whether he is functioning as artist, or as man of science." The recognition of this is significant, because recent philosophy (at least that of 1917) has been (with a few notable exceptions) *inquiry* rather than *art*, science rather than philosophy in the narrower sense; and the conscious recognition of this and endeavor to develop scientific techniques is a genuine turning-point, or crisis, in philosophical thinking.

SOCIAL AND POLITICAL PHILOSOPHY: Prof. Lovejoy's address is symbolical of current tendencies in another respect, in that it emphasizes the conditions of progress. This is true of most of the social and political philosophy of the year. The war, of course, has been the great object around which social philosophy centres and from which it takes its point of departure. But whereas social philosophy in the last two years has been engaged chiefly with the causes of the war, its historical interpretation, and its philosophical background (typified by Dewey's "German Philosophy and Politics" and Santayana's "Egotism in German Philosophy") this year marks a definite face-about toward the future, towards the basis of peace, social reconstruction, international relations, etc. Typical of this attitude are Russell's *Principles of Social Reconstruction* and *Political Ideals*, J. A. Hobson's *Democracy After the War*, Gilbert Murray's *The Way Forward: Three Articles on Liberal Policy*, J. H. Tufts' *Our Democracy: Its Origin and Its Tasks*, *The Hope for Society: Essays on Social Reconstruction After the War*, edited by L. Gardner, the July number of the *International Journal of Ethics*, and numerous articles in leading periodicals. These all reflect the dominant tendency in social philosophy, the look forward, the *concern* for progress. It marks the turning toward a sobered and sound internationalism. The subject for the American Association, December, 1917, "Ethics and International Relations," bears further witness to this tendency. And in France especially the idea that the goal of French nationalism is internationalism has been gaining ground steadily. One of the last words of M. V. Delbos was: "Nous pouvons bien dire qu'elle n'a usé de notre esprit national que pour accomplir son œuvre dans un sens universel et sans préjugé national" ("Caractères de la philosophie française," *Rev. de Méta.*). And in a similar spirit M. Th. Ruyssen declares: "'L'esprit français est universel et humain, ou il n'est pas'" ("Une idée en péril," *Rev. de Méta.*

Perhaps the most remarkable characteristic of the social and political philosophy of 1917 is that it has undertaken a thorough criticism and analysis of our current catch-words and "principles," instead of flaunting them as ultimate standards. Philosophers have made it their business to re-define, to give concrete meaning and definite content to such terms as democracy, humanity, liberty, etc. There are some exceptions to this. Rousseau's philosophy has been proclaimed by some writers (v. H. B. Alexander in *Jour. of Phil.*, *Intern. Jour of Ethics*, etc.) as the philosophy of democracy as over against that of autocracy, as representing liberty and reason as over against loyalty and divine right. Mr. Hugh Elliot sees in the war the triumph of Spencerism. M. T. Blauvelt's *Ultimate Ideals* and F. A. M. Spencer's *Human Ideals* also represent the tendency of philosophising the passions and prejudices brought out by the war. But the great bulk of social philosophy has been critical, analytic, constructive. "It dawns on students of social problems, as it dawned long since on philosophers, that the beginning of their wisdom is a confession of their ignorance" (Will Durant: *Philosophy and the Social Problem*). Mr. Durant's book is valuable in this connection in emphasizing the social motive in back of the philosophies of Socrates, Plato, Francis Bacon, Spinoza, and Nietzsche; and Prof. Longwell has pointed out the limitations imposed on philosophy by social structure ("Philosophy as Handmaid of Society," *Phil. Rev.*). Of the long list of critical analyses of social concepts mentioned above only a few can be mentioned here: E. Bréhier in "Divers aspects de la notion d'humanité" (*Rev. de Méta.*) finds three distinct meanings of the term, humanity; Adrien Naville in "Quelques espèces de libertés" (*Rev. Phil'que*) undertakes a critique of the concept of liberty and its bearing on legislation; Emile Boutroux's "Liberty of Conscience" (*Inter. Jour. of Ethics*) is a careful analysis of that problem. John Dewey has also attacked the same and allied problems in several articles in the *New Republic.* The problem of internationalism has been dealt with critically by H. C. Brown (*Inter. Jour. of Ethics*), Maj. E. Crawshay-Williams (*International Idea*), H. N. Brailsford (*A League of Nations*), "Cosmos" (*The Basis of a Durable Peace*), H. M. Kallen ("The Structures of a Lasting Peace," in the *Dial*). It is quite evident that here the line between social philosophy and sociology, economics, and politics has been made difficult to draw. The essays by Warner Fite, Davenport (*Jour. of Phil.*), and Stuart (in *Creative Intelligence*) are further evidence of philosophy's penetration into our economic activities; and those of Roscoe Pound (*Inter. Jour. of Ethics*) and M. R. Cohen (*Jour. of Phil.*) mark the beginnings of a philosophy of law.

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* On account of the war our knowledge of German philosophic activity during the year is so fragmentary that it seems best to postpone any discussion of it.

We come now to social philosophy in general. Chief among such contributions are Russell's *Principles of Social Reconstruction* (American Edit., *Why Men Fight*) and *Political Ideas*, a collection of miscellaneous essays, and Bosanquet's *Social and International Ideals*, likewise a collection of essays. Russell's books are more valuable for their keen and wholesome criticism than for their constructive ideas. His basic ideas are that man's "impulses" can be classified according to their results, some being impulses of possession, others creative, etc. The "impulse towards force" must be weakened. The state has too much power; the value of the state is more limited than is usually assumed, and its existence is justified only in so far as the good of the state is the good of individuals severally. Russell's position has been characterized as a "combination of anarchism and guild socialism." A similar position is taken by G. Lowes Dickinson in *The Choice Before Us*, a book directed against "the religion of the God-state" in the interests of a refined individualism. Bosanquet, on the other hand, both in his *Social and International Ideas* and his address before the Aristotelian Society on "The Function of the State in Promoting the Unity of Mankind," magnifies and exalts the function and value of the state. An interesting contribution to political philosophy has been made by H. P. Farrell in *An Introduction to Political Philosophy.* The first part of the book is an exposition of Plato and Aristotle; the second part is devoted to an analysis of "The Great Error": "The great error in political philosophy has been the confusion between the historical inquiry into the origin of the state among civilized peoples and the philosophical inquiry into the moral basis upon which the state rests." Other books which should at least be mentioned are: Sir Charles Waldstein, *Aristodemocracy from the Great War Back to Moses, Christ, and Plato* (1916); Ramiro de Maezter, *Authority, Liberty, and Function in the Light of the War:* a critique of Authority and Liberty as the Foundation of the Modern State and an attempt to base Societies on the Principle of Function (as in Plato and Aristotle); H. J. Laski, *Studies in the Problem of Sovereignty* (a pluralistic theory of society); Charles A. Ellwood, *An Introduction to Social Psychology;* I. Maxwell, *La Philosophie Sociale et La Guerre Actuelle;* R. Anthony, *La force et le droit.* Of more general interest for Ethical Theory are: John Viscount Morley's *Recollections* (2 vols.), a work of tremendous scope, by an ardent liberal and of especial interest to students of the liberal movement. It is marred, however, by the fragmentary and dispersed character of its contents. Charles Werner, *Études de philosophie morale;* Alexandre Vinet, *Philosophie morale et sociale.*

PHILOSOPHY AND PSYCHOLOGY OF RELIGION. There has been almost a flood of books on the philosophical aspects of religion, particularly in England, an indirect, and in some cases direct, product of the war. Chief among these are H. G. Wells, *God, the Invisible King;* A. Seth Pringle-Pattison, *The Idea of God in the Light of Recent Philosophy;* and William Temple, *Mens Creatrix.* The second of the three constitutes the Gifford Lectures, 1912-13, and is a historical criticism. *Mens Creatrix* has for its theme man's search for Unity in Mind, where it is only partially satisfied, then successively in Art, Conduct, and finally in Religion, where alone it is completely satisfied, by the concept of a Universal Mind, or God. Other works, which limited space permits us merely to mention, are: E. H. Reeman, *Do We Need a New Idea of God?;* James Lindsay, *A Philosophical System of Theistic Idealism;* Geo. A. Barrow, *The Validity of the Religious Experience;* G. A. Coe, *A Social Theory of Religious Education* (cf. his *Psychology of Religion*, 1916); G. A. Barton, *The Religions of the World*, Vol. IX of the *Encyclopædia of Religion and Ethics;* Clodius Piat, *Idées directrices de la morale chrétienne.*

OBJECTIVE STUDY OF INTELLIGENCE. Another movement, belonging more strictly to psychology, but attaining increasing philosophical importance, and marking a genuine philosophical crisis, is the functional, behavioristic, objective study of intelligence, the attempt to learn the mechanics of mind. During 1917 the writings of Watson, Holt, and Warren in the United States, and of Bernheim, Grasset, le Dantec, and Philippe in France are of particular note. H. C. Brown in a review of Dewey's *Essays in Experimental Logic* (*Jour. of Phil.*) has pointed out the fundamental importance of this psychological approach for an understanding of experimental logic. And in general this method promises to be of increasing significance for logic, ethics, and metaphysics.

IDEALISM, REALISM, PRAGMATISM. Turning now to "philosophy proper" we see the battle royal between these three -isms going on with unabated furor. The outstanding contribution to pragmatic literature this year has been *Creative Intelligence*, a series of essays by Dewey, A. W. Moore, Brown, Meade, Bode, Stuart, Tufts, and Kallen, in which the pragmatic method is applied to mathematics, logic, psychology, economics, ethics, and art. The essays have been characterized by Prof. Bush as a fine example of *constructive* intelligence, and by Prof. Fite as overemphasizing the future, robbing man of his past, and indulging in "appeals to the opaque." Prof. Sellars (*Jour. of Phil.*) charges pragmatism with the failure to analyze the terms "experience" and "situation," which analysis he supplies in his "critical realism." Prof. Lloyd (*Jour. of Phil.*) from the side of idealism charges pragmatism with attempting to get along without a metaphysics, and Prof. Hoernlé (*Phil. Rev.*) has attempted to sketch Dewey's growth (?) away from idealism. Prof. Boodin in his *Realistic Universe* has attempted a kind of pragmatic metaphysics in terms of Energy, Consciousness, Space, Time, and Form. In the idealistic camp the outstanding contribution is a volume of *Philosophical Essays in Honor of James Edwin Creighton* by former students. Several of the essays are historical critiques, and the others are metaphysical. Professor Creighton himself has made a valuable contribution by his article on "Two types of Idealism" (*Phil. Rev.*), in which he distinguishes "mentalism," "panpsychism," etc. (which he claims are fundamentally realistic) from genuine idealism, or "speculative philosophy," to use Bosanquet's term. May Sinclair's *A Defense of Idealism* also deserves mention, though it is epigrammatic, rather than scholarly.

The subject of psycho-physical dualism has been in the forefront of discussion in the United States. A large number of the papers on this subject read at the 1916 meeting of the American Association have been published in the leading periodicals. The chief contributors have been Hoernlé, Grace A. de Laguna, Pratt, Fite, Bode, Drake, Cohen, and Dewey. The discussion has been, of course, inconclusive, but several points have been emphasized especially: (1) that the physical and psychical are not mutually exclusive nor complementary terms, that neither is limited by the other (v. Miss de Laguna's paper); (2) that dualism does not necessarily imply that there are only two kinds of reality, but merely that there are at least two. It is evident that these points are negative, and that even these are contested. Relevant here is J. F. Dashiell's contention (*Jour. of Phil.*) that spiritual values must be kept relative to purposes as over against data (nature), and not reified into an ontological dualism.

In England, a logical discussion between Messrs. Mercier, Pickard-Cambridge, Bosanquet, Schiller, and Sheldon centring about the problem of the necessity of the universal in a fortiori reasoning, has attracted considerable attention. A valuable contribution has been made by P. Coffey in his two volumes, *Epistemology, or the Theory of Knowledge*, which attacks the problem of knowledge from the scholastic point of view. The subtitle, however, "An Introduction to General Metaphysics," serves to illustrate how persistent is the confusion between the problem of knowledge and metaphysics.

METAPHYSICS. Metaphysical analysis has centred around the concepts of matter and energy and of time. H. C. Brown has attempted to show the instrumental value of atoms and the fruitlessness of the separation of matter and energy (*Jour. of Phil.*). F. J. E. Woodbridge has published a very suggestive paper on "Structure" (*Jour. of Phil.*), suggesting that this concept be identified with that of matter. In France le Dantec, Rougier, and Selme have discussed the metaphysical implications of "the degradation of energy." In the analysis of time, purpose, and the philosophy of history we have contributions by Boutroux, *The Contingency of the Laws of Nature;* R. B. Perry, several articles on Purpose (*Monist* and *Phil. Rev.*); Wordsworth, *Time as Succession;* F. Paulhan, *Le sens de l'évolution;* Benedetto Croce, *Teoria e Storia della Storiografia*, being Vol. IV of his *Filosofia dello Spirito* (presents a Hegelian philosophy of history: history is the most concrete and universal form in which the activity of mind is presented).

The problem of values has been discussed in the American periodicals by Urban, Perry, and Fisher, and in England by F. C. Bartlett in a paper on "Valuation and Existence," read before the Aristotelian Society; the discussion centring around the metaphysical status of values and value-judgments.

Other works of general philosophical interest are: J. B. Baillie, "On the Nature of Memory-Knowledge" (*Mind*); John Laird, *Problems of the Self* (a defense of the soul as substance); L. J. Henderson, *The Order of Nature;* Dewitt H. Parker, *The Self and Nature.*

MATHEMATICAL LOGIC. In this field several important contributions have been made during the year, notably those of Whitehead (*The Organization of Thought*), Couturat ("Sur les rapports logiques des concepts et des propositions," and "La logique algorithmique et le calcul des probabilités," both in *Rev. de Méta.*), F. Enriques ("Sur quelques questions soulevées par l'infini mathématique," in *Rev. de Méta.*), P. Richardson and E. H. Landis (*Fundamental Conceptions of Modern Mathematics*).

ASSOCIATIONS AND NOTES. The topics for discussion at the Western Philosophical Association meeting in April were: (1) In what sense does the human person possess independence of his physical environment and organism? (2) What reality has the history of the world as the physical and biological sciences present it? (3) Does any being exist that plays the part of God in Theism? The Gifford Lectures at Glasgow University are being given by Prof. Samuel Alexander on "Space, Time, and Deity." Emile Boutroux is Herbert Spencer lecturer at the University of Oxford.

NECROLOGY. Prof. John E. Russell of Williams College died February 25, 1917. His most memorable work, outside his great influence as a teacher, was his critical essays on pragmatism. The Rev. Brother Chrysostom (Joseph J. Conlen), Professor of Philosophy and Psychology at Manhattan College, died January 24, 1917. French philosophy lost one of its ablest exponents by the death of M. Theodule Ribot on

December 9, 1916. He was the founder of the *Revue Philosophique* in 1876 and was a leader in reëstablishing psychology, especially pathological psychology, in France. In his last years he turned to more speculative interests (v. his last fragment in the *Revue Philosophique*). A further loss was sustained by the death of one of M. Ribot's associates, M. Félix le Dantec, June 6, 1917, chargé du cours de biologie générale à la Sorbonne. Several prominent young French philosophers were killed in action during the year, among them M. Augustin Guyau and M. Henri Dufumier.

Texts. R. W. Sellars: *The Essentials of Logic*, and by the same author, *The Essentials of Philosophy*. Both texts embody much of recent advances, but for the most part in an uncritical manner. M. T. Marvin: *The History of European Philosophy*. This book has an excellent and novel general plan, and marks a definite break with our traditional histories; but the author's handling of the subject matter leaves much to be desired.

Critical and Historical Researches. H. Wildon Carr, *The Philosophy of Benedetto Croce:* the problem of art and history; William M. Salter, *Nietzsche, the Thinker;* V. Delbos, Several essays on the history of philosophy in the *Rev. de Méta.;* P. Masson-Oursel, "Études de logique comparée," in *Rev. Philosophique;* F. Sartiaux, *Morale Kantienne et morale humaine;* Botsford and Sihler, *Hellenic Civilization;* G. M. Stratton, *Theophrastus and the Greek Physiological Psychology before Aristotle;* R. M. Wenley, *The Life and Work of George Sylvester Morris: A Chapter in the History of American Thought in the 19th Century;* Lynn Thorndyke, *The History of Mediæval Europe;* J. F. D'Alton, *Horace and His Age.*

Translations and New Editions. B. Croce, *Logic as the Science of the Pure Concept*, trans. by D. Ainslie; Th. Flournoy, *The Philosophy of William James* (authorized translation by E. B. Holt and William James, Jr.); Mary W. Calkins, *The Persistent Problems of Philosophy*, 4th rev. ed.; *Seneca ad Lucilium Epistolæ Morales*, trans. by R. M. Gummere; *Lucretius: On the Nature of Things*, metrical translation by W. E. Leonard.

PHOSPHATE. See Fertilizers.

PHOSPHORIC ACID. See Fertilizers.

PHOTOGRAPHY OF THE HEAVENS. See Astronomy.

PHOTOTHERAPY. The use of various forms of artificial light in the treatment of disease, particularly of tuberculosis, is apparently on the increase. The favorable influence of natural sunlight upon tuberculous processes is well known, and the closer the artificial light resembles sunlight the better the results. The advantage of artificial rays is that they can be employed in countries where sunlight is not always available, or the prevailing temperature is too low, and that the rays can be projected into cavities such as the mouth. Reyn, of Copenhagen, extols the advantages of exposure to the carbon arc light, particularly in lupus, which is a form of tuberculosis. Spitzer confirms the experiences of Reyn, and found that acute tuberculous ulcerations in the mouth, as well as the chronic granulating type, healed completely in the course of a month or two, even when the ulcerations burrowed deep into the tongue, with extensive involvement of the lips. In cases of joint tuberculosis, better results were obtained with the quartz light. Schmidt of the Finsen Light Institute at Copenhagen, finds that Finsen's arrangement of the carbon arc lights give rays which approaches very nearly in chemical action to natural sunlight. He records the results of treating patients with pulmonary tuberculosis, and states that the curative effects were much less satisfactory than in surgical tuberculosis. There was no influence on fever, night sweats, expectoration, or the number of bacilli in the sputum.

The mercury vapor quartz lamp has been used by Haelebacher in goitre with excellent results in a certain proportion of cases. Cure or marked improvement was obtained in the majority of patients, the symptoms of stenosis disappearing and the goitre growing softer after two or three exposures. Large cystic goitres, however, resisted treatment entirely.

PHYSICAL CHEMISTRY. See Chemistry.

PHYSICS. The war has mobilized science, and physics is solving major military problems on both sides. Aviation, sound ranging, signaling, gas pressures, submarine detection, radio communication, and many other problems are invading the physical laboratories of all countries. A harvest of research results may be anticipated when peace comes. The German Reichsanstalt, the National Physical Laboratory of England, and the National Bureau of Standards are all contributing not alone to the war, but to the industries and to science after the war. Not only in experimental physics is the activity being felt, but in the national and international organization of science, both institutional and individual. Our own research council is doing a work which will have far-reaching results in the closer coördination and coöperation in scientific research. Doubtless the output is mainly diverted into military lines at present and hence is not open for publication. However, enough of general interest has been done to make it necessary merely to illustrate the progress by a few selected examples of work accomplished in the several branches of physics.

In recent years physics has been taken up by astronomers while physicists are taking up astronomical problems in the laboratories. Extremes meet in the simultaneous solutions of cosmic and subatomic problems which are just at present in the foreground.

The finite velocity of propagation of gravitation, Gerber holds, explains the anomalous perihelion motion of the planet Mercury, finding on computation that it should equal the velocity of light, radiant heat, and electric waves. On Einstein's theory of gravitation light should be affected by gravitation and at the solar eclipse in May, 1919, this will be determined. A list of conjunction stars with their positions computed for that time is being prepared for this purpose. Lodge recalls that a wave front of light stimulates properties of matter, conveys momentum, and sustains and carries the light pressure until a target is struck. If the momentum inertia constitutes temporary matter, subject to gravity, the gravitative deflection of a ray could be easily detected. Einstein's theory of gravitation has important astronomical consequences on our ideas of the gravitational field of the fixed stars, the upper limit for total mass of the stars, irreality of coördinates, relativity of rotation, and the origin of inertia (now held identical with gravitation). All of this shows the significance of his theory for cosmic unity. Nipher is reported to have succeeded in increasing or decreasing the gravitational pull between two small bodies, and of actually converting it into a negative repulsion. A discussion of the change of gravitation with temperature began with Shaw's definite statement of his experimental results. His view was opposed on theoretical grounds.

Bowie summarizes gravimetric surveys at 358 stations in India, Europe, Canada, and the United States, reducing the results by Hayford's isostatic method. A new formula permits a computation of the value of gravity within one part in 50,000. The compensation depth is found to be about 96 kilometres. This work aims to secure a more accurate value of the earth's flattening, to derive an accurate value of gravity for physical and chemical research, and to study the isostatic compensation movements of the earth's crust. For this purpose observations at sea are urgently needed as pointed out by Hayford. Good determinations have been made at three thousand widely scattered land stations, but on the three-quarters of the earth's surface covered by the sea no reliable observations have yet been made. These would be of more value for determining the depth below the surface at which abnormally dense masses are located. In Briggs' new method for measuring gravity at sea with an accuracy of 1 in 100,000, a change in gravity causes a corresponding change in the height of a mercury column in a barometer of the usual type, but with a sealed-in atmosphere of nitrogen below in place of free atmospheric exposure.

Jeans described the results of increasing rotation in breaking up a cosmic mass—first, flattening, loss of symmetry, ellipsoid formation, pear shaping, and separation of smaller end as a satellite; or second, after flattening, the formation of a ring of matter which breaks up into satellites. The first is the usual binary star formation, the second the spiral nebula. It is of interest to note that Van Maanen has proved the rotation of nebulas M101 and M81, and Campbell and Moore have detected the rapid rotation of nebula N. G. C. 7026.

Hale and Ellerman have studied the structure of the solar atmosphere at various levels, comparing it with that of the low-lying photosphere and sun spots. Langley's rice grains (130 miles) are used for comparison. Calcium flocculi are noted less than 400 miles long. At higher levels the smallest flocculi are double this size, showing that the photosphere and gaseous atmosphere consist of rising hot gases. Larmore and Yamaga show that (except for one observer) an unbroken solar periodicity of about 11.125 years is firmly established. The periodicity graph shows equal areas above and below, the curve contour repeating as a reflected image.

Ellerman at Mt. Wilson describes the newly found solar phenomenon which he calls "solar hydrogen bombs." The first appearance in the spectogram was so startling that the reality was doubted. Now that they have been seen visually as well, their existence is undoubted. The startling band displacement to either side of the spectrum line Ha has been found as high as thirty Angstrom units, usually much less. In the explosion hydrogen seems to be the only element, and the short duration, one to three minutes usually (rarely ten), suggested the term hydrogen bombs. These are found among active sun spot groups; at times a number follow in the same place like the balls of a Roman candle at intervals varying from ten to twenty minutes." They must occur well below the reversing layer since the hydrogen absorption line is unaffected. Evershed describes a recent solar eruptive prominence which reached a height of 50,000 miles, and in parts showed a velocity of 450 kilometres per second. In this eruption all parts of the prominence shot out radially from a point in the chromosphere at the base of the column.

The electron as usual is the centre of interest to physicists, its value being now the basic physical constant. During the past year Millikan announced his recent redetermination of the electron. The new value is identical with that previously announced and is equal to $(4.774 \pm 0.005 \times 10^{-10})$ a result dependable to one part in a thousand. Millikan's book *The Electron*, issued during the year, explains the latest view of the atomic structure of electricity, the properties of the elementary electric unit—the electron, and their bearing upon atomic structure and the nature of electromagnetic radiation. The increased interest in the electron is not surprising since it is now known to involve molecular and atomic magnitudes, the most significant radiation constants, Planck's h, Stefan-Boltzmann's constant o, Wien's Constant C_2, and X-ray constants such as the wave lengths of characteristic X-rays.

An investigation led Debye to the conclusion that the first electron ring in all atoms consists of three electrons, basing his argument on the theoretical work of Bohr and Sommerfield. A study of the atomic structure based on the disintegration theory assumes structural hysteresis in taking up new atomic formations with the successive loss of electrons in regular sequence from maximum atomic volume to maximum density. An adjustment gradually takes place between minimum density and minimum volume. The work suggests instability of structural formation and that permanent elements are rare.

Wigand during the year issued his summary of observations on the ionization of the earth's atmosphere during the presence of Halley's comet. Ramsay has devised an atomic model, using small bicycle balls floating in mercury. Motion is produced by sending a current into the mercury by a middle electrode, taking it out at four corners of the tray in which the mercury rotates in the vertical magnetic field. Interesting imitations are possible illustrating light radiation, X-ray production, photoelectric effect, ionization by hot bodies, gamma rays, etc.

Harkins further develops his atomic evolution hypothesis based on hydrogen and helium atoms. On the theory that the hydrogen atoms form the helium atom the elements fall into two series, one of even atomic number, the other of odd. This gives a "new periodic series" based on atomic structure—the Mendeléeff is presumably based on the group of free electrons associated with the atoms.

In a study of the kinetic theory of reaction-velocity, March demonstrates that for every compound a critical temperature exists above which no amount of pressure is sufficient to maintain the compound intact. Cohesion, as defined by Chatley in his electrical theory of cohesion, is the net attraction between molecules chemically saturated, or relatively so, at distances approximating their molecular diameter. Adhesion he considers as a special case of cohesion for dissimilar molecules. Cohesive attraction merges into chemical affinity (electrostatic linkage) as proximity increases, and becomes Newtonian gravitation as the particles separate. Chatley's formula gives the bond at contact as 1 per cent of the electrostatic force, decreasing to ordinary Newtonian values at 10 molecular diameters' distance.

Langmuir's beautiful researches on the spread of films of oil on water are of special interest. He prefaces that all the forces involved in the structure of solids and liquids are similar in nature to those causing chemical combination. Oil spreads because a part of the oil molecule (e.g., the COOH group of oleic acid) is attracted by the water. If active groups are absent no spreading results (for example, with pure hydrocarbon oil). The oil required to affect surface tension corresponds to a layer 1 molecule deep. With limited oil, spreading stops when the available COOH groups are in contact with water. There is no transition layer below the contact layer. Gibbs's equation permits computation of the amount of solute required to form the non-molecular layer, and the length and cross sections of the molecules forming the surface may then be found.

Bridgeman's study of polymorphism showed that one out of three substances is polymorphic (reversibly so),—thirty-seven such substances having been found. Ninety-four other substances gave no result at 12,000 kilograms' pressure at 20° and at 200°. Chemical similarity and crystalline similarity are used as clues in locating probable isomorphic groups. There seems to be no simple type diagram toward which polymorphic substances tend at high pressure. He suggests that the shape of the atoms is a factor to be studied.

Johnstone finds that stretching increases the thermal conductivity of wires of copper, steel, nickel, aluminum, and zinc by .05 per cent at a tension of .7 of the elastic limit. Popplewell, both by theory and test, shows that high speed reversals in alternating stress tests enhance endurance, confirming previous results. Iron wires, according to Lautz, resist fracture by alternate bending with fair constancy up to 120° C., above which the resistance increases to 220°, when it falls abruptly. The maximum resistance is double that at ordinary temperatures. Hersey develops formulas for the frequency of vibration of elastic systems, including changes with temperature, and applies these to special cases such as the temperature compensation of a tuning fork, to the telephone diaphragm, and to the balance wheel of a watch.

Rayleigh's stimulating discussion of glass cutting awakened much illuminating discussion. He recalled that the only account of glass cutting by the diamond is a century old, and in suggesting renewed inquiry, asked a number of pertinent questions. Several writers took up the subject and discussed the hiss of the diamond at work, the beautiful scalloped border of the cut, the snapping rift, stress lines near a compressed area on the surface of an elastic solid, and the sinking of the diamond into the glass before the rift occurs.

Silberstein relates the molecular refractivity of an isotropic substance having two equal atoms, defining two constants of the atom independent of the free wave length. Refraction and dispersion are simple functions of these constants and of interatomic distance. For hydrogen the central distance between the atoms is nearly a semi-diameter of the hydrogen molecules. Hydrogen and nitrogen give the same results.

Mercury light is emitted when ions recombine to form atoms—not at the time the atoms break up, since the maximum intensity occurs after the current maximum, and when the current ceases the light continues. Beatty concludes that energy distribution in the spectrum does not depend on the energy of the striking electron or molecule. The luminous discharge follows the recombining of ionized atoms.

Buisson reports the visibility distance of a light of one candle power (not an actual candle) as 27 kilometres, much higher than heretofore accepted. This corresponds to a star of magnitude 8, the energy received by the eye being 10^{-9} ergs. Coblentz derives the mechanical equivalent of light of maximum illuminous efficiency, one watt equals 617 lumens, or 49.1 candles. Coblentz rates the radiant luminous efficiency of a vacuum tungsten lamp operating at 1.23 watts per candle as 1.42 per cent. Nutting gives graphic results showing eye adaptation to high and low illumination, effect of varying brightness of field on percentage brightness-change perceptible to the eye, action of pupil aperture in closing to counteract excess light, and relation to the problem of glare.

Ishiwara deduces a general series formula for spectral line series following Bohr's derivation of the Balmer formula from the quantum theory. Sanford finds a simple relation between convergence wave length of spectral series and the atomic radii. He derives the electronic radius in terms of wave lengths and finds Heydweiller's radii closely proportional to the square roots of the convergency wave lengths.

Crystalline liquids which reflect violet have feeble rotatory power, which increases as the reflected light has greater wave length, according to Gaubert. Pure cholesterine propionate rotates the yellow waves 100° or more through a thickness of one millimetre. Proceeding from the violet end, rotation is first laevo and then dextro, passing through zero when light of that wave length is reflected.

Miller's Lowell lectures on sound, with their wealth of illustrative material, appeared during the year, containing his interesting graphs of tone qualities, recorded with his own phonodeik. Stewart made a study of "binaural beats" from two tones slightly off pitch directed one to each ear. The war has given much opportunity for studying the audibility of distant bombarding and explosions, and much data was published during the year. The Doppler effect particularly was the subject of discussion. The case of a deaf soldier affected by distant explosions showed that distance transmission was through the earth. Two new precision sources of sound were described, one by Arnold and Crandall, the other by Wente. The former is a thermophone of simple design and easy to operate at any frequency or with known relative loudness at different frequencies throughout the acoustic range. Wente's transmitter, of the electrostatic type, measures sound intensities over a wide range of frequencies and may be used to ascertain phase differences and relative intensities of components.

The equilibrium temperature of a body exposed to radiation results in a striking conclusion given by Fabry. From this it appears that a sphere having a single violet absorption band would be heated to the melting point of platinum if exposed to solar radiation at the outer limit of the earth's atmosphere. This is based on the fact that such a body could exchange energy only as violet radiation which is emitted appreciably only at high temperatures. Until then energy would be absorbed but not emitted and thus the temperature would rise.

The relationship discovered by Nernst between melting points of pure metals and their atomic weights led Kutter to plot the latter against volatility, finding the points to lie on a single curve which he derived. The volatility of gold in an atmosphere of hydrogen at 250° and above is ascribed by Mostowitsch and Pletneff to the formation of a volatile hydride, Au_2H_2, since gold is not volatile in other gases.

Fehr found that the magnetic critical point in carbon steels indicated without exception the proper annealing temperature to give the finest grain, maximum ductility, and maximum shock resistance. Careful control of temperature gives a high carbon steel the ductility of a low carbon and with a higher elastic limit.

Burgess discusses high temperature measurements in steel furnace practice, stating that pyrometric methods are impracticable on the Bessemer charge, but in open hearth practice pyrometric control is quite feasible.

Pomey would make specific inductive capacity a fundamental unit, since in the c. g. s. system the electrostatic and electromagnetic units are incompatible. Brylinski suggests as fundamental the units of length, time, electric current, and electric resistance. Of the c. g. s. units, mass alone would change, becoming ten metric tons.

The call for more systematic quantities is voiced by Tolman, who believes physics must simplify and systematize its units, and suggests five classes corresponding to space, time, matter, electricity, and entropy (or degree of run-downness)—namely geometrical, kinematical (including time), mechanical, electrical, and thermodynamical. He would substitute quantity of electric charge and entropy respectively for permeability and temperature, and emphasizes that all fundamental quantities should have extensive magnitude.

Hall suggests that electric conduction may be due to the metal ion, and finds that one ion for each 170 atoms would maintain 1000 amperes per square centimetre in copper at 300° C. He shows that not far above absolute zero conductive contact between atoms is rare and the electrons would not go from one metal particle unless one is an atom and the other an ion.

Shaha discussing Maxwellian pressure considers the case that good electric conductors made good reflectors of radiant energy. The electric vector of the light ray gives a small charge on the surface and a current within the conductor. The former gives a negative surface pressure; the latter in the field of the magnetic vector of the ray gives a positive pressure. The average of the two gives the radiation pressure.

Rudge describes a self-recording electrometre for atmospheric electricity on the principle of a quadrant electrometre designed for cheapness and simplicity. The deflections of the needle show the variations in atmospheric potential gradient. A radium collector was used in connection with the electrometre.

Kennard shows that electromagnetic induction depends in part upon absolute rotation in the mechanical sense, requiring a stationary ether—a difficulty for relativists who reject the ether. Barnett produces magnetization by rotation, in iron, nickel, and cobalt, confirming his own equations, qualitatively and quantitatively, assuming that electrons alone have orbital motion in the molecule. Rood finds cast iron unaffected magnetically by tension, but that wrought iron and steel are greatly affected.

A number of magnetic storms are described in the journals of the year and Tarrada has studied the short period disturbances. The latter are shorter at noon, longer at night—the daily frequency being correlated with the sun's rotation period.

The year's work on X-rays included the determination of refractive index of X-rays as unity, certain to within five parts in a million. Davis develops a theory of "white" X-ray spectrum, concluding that the energy radiated is proportional to the square of the frequency. He derives an expression for the relation between radiated energy at constant wave length, and the voltage applied to the X-ray tube.

Rutherford finds the gamma rays from radium C have one-hundredth the wave length of the soft gamms rays from radium B, much shorter than any given at highest voltages in X-ray tubes. X-rays excited at 196,000 volts were found by Rutherford to penetrate ten millimetres of lead with intensity reduced to less than one-millionth the initial value.

Barkla shows X-rays to be emitted by electrons, groups of electrons or even atoms, often in quantities minute compared with the quantum. To him the quantum is "unit of atomic energy which must be absorbed to change the configuration of the atom and is radiated when that configuration returns to its original state." The cathode displaces electrons and produces vibration, some characteristic, others not, which emit primary radiation.

The rate of decay of brightness of radium luminous paints varies with the amount of radium present; a decline of 50 per cent in a year is quite common. In one case this occurred within twenty-four hours.

The radioactivity of stony meteors was found by Quirke and Finkelstein to be one-fourth that of igneous rocks. Metallic meteorites were nearly free of radioactivity. Twenty-two samples were studied. See also ASTRONOMY.

PIATT, JOHN JAMES. An American journalist and author, died in Cincinnati, Ohio, February 16, 1917. He was born at James' Mills, Ind., in 1835. His education was gained at Capital University, Columbus, Ohio, and at Kenyon College. While he was contributing verse and editorials to the Louisville (Ky.) *Journal* between 1857 and 1860, he was intimate with William Dean Howells, and in the latter year they published together *Poems of Two Friends*. Mr. Piatt went to Washington in 1867 to be a clerk in the Treasury Department. He returned to editorial work on the Cincinnati

Chronicle, and for several years was correspondent of the Cincinnati *Commercial*. He was chosen librarian of the National House of Representatives in 1871. For ten years (1882-93) he served as a United States consul in Ireland at Cork, and for a few months at Dublin. Mr. Piatt published many volumes of verse, such as *Landmarks*, *Poems of House and Home*, and *Western Windows*, and others with his wife. A biographical sketch was written by G. D. Prentice for a collected edition in 1880.

PIGGERY, MUNICIPAL. See GARBAGE AND REFUSE DISPOSAL.

PIG RAISING. See STOCK RAISING.

PILGRIM TERCENTENARY. See EXPOSITIONS.

PINES, ISLE OF. An island south of the western end of Cuba, forming part of the Cuban province of Habana. Area, 986 square miles. There is a population of only a few thousands, but a considerable amount of capital, especially American, has been invested in the island. It is estimated that about 98 per cent of the entire island is owned by American investors. In 1917, it was reported that the total area under cultivation was 11,330 acres, of which 8349 acres were in citrus fruits, 468 in pineapples, 640 in vegetables, and 1873 in miscellaneous fruits and vegetables. A particularly fine quality of grapefruit is produced. The island has 16 American manufacturing plants, 26 fruit and vegetable packing houses, 6 sawmills, 26 nurseries, and an American bank with two branches.

PINK BOLLWORM. See COTTON; ENTOMOLOGY.

PITTSBURGH, UNIVERSITY OF. A non-sectarian co-educational institution at Pittsburgh, Pa. Until 1908 it was known as the Western University of Pennsylvania and had been founded under that name in 1819. In the fall of 1917 there were 3015 students and 450 members of the faculty; 470 students, 68 members of the faculty, and 263 alumni were in government service at the end of the year. Volumes in the library numbered 39,250. Productive funds in 1917 amounted to $566,841, and the income therefrom to $27,159. Chancellor, Samuel Black McCormick.

PLANETS. See ASTRONOMY.

PLANT BREEDING. See BOTANY; and HORTICULTURE.

PLANT DISEASES. See BOTANY.

PLANT ECOLOGY. See BOTANY.

PLANT PHYSIOLOGY. See BOTANY.

PLANT QUARANTINE. See BOTANY.

PLATINUM. The platinum situation in 1917 was very serious in the United States. At the beginning of the year, the actual supply was held to be fairly large although the production from Russia was smaller than before the war. In November, 1916, the Russian government had assumed the output of the mines through the agency of the State Bank, but with the revolution, the industry became thoroughly demoralized and in several instances the managers of mines were driven away and their operation was attempted by peasants. The production of platinum from the Ural Mountains was estimated by Russian authorities as 100,000 troy oz. in 1917, as compared with 166,778 oz. in 1916 and 113,090 oz. in 1915, and 155,838 oz. in 1914. Colombia, the only other substantial producer of platinum had an estimated production of 30,000 in 1917 and the remainder of the world had an output estimated at 1500 troy oz., so that the total world's production was estimated at about 131,500 troy oz.

In 1917, there was a marked shortage of platinum which threatened the jewelry trade which had been a heavy purchaser and with the entrance of the United States into the war, the public were informed that platinum was required for technical purposes and not only were jewelers and others warned against its use for that purpose, but the general public was told that the metal itself might be required even from their own jewels. Late in the year about 21,000 troy oz. of platinum, which had been collected in Russia by various American engineers, the Russian-English Bank, of Petrograd, and U. S. Secretary of Commerce Redfield, was available for the technical purposes of the United States government. The price of platinum which at the beginning of the year was about $80 per troy oz. rose to $105 by the end of February and was maintained at about this figure with minor fluctuations during the rest of the year. A few deposits of platinum in Alaska were announced as being of prominence, but no large amount came on the market from this source. See CHEMISTRY, INDUSTRIAL.

PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA. The association was organized in Washington, D. C., in 1907. Since then there has been increasing activity in securing playgrounds and recreation centres for young and old, statistics showing that during 1917 at least 480 cities conducted playground and recreation centres under leadership. The cities reporting on expenditures stated that they had expended $4,234,718. Many cities have been added through the field secretaries sent out by the association to establish on a permanent basis year-round systems of recreation headed by recreation secretaries or superintendents of recreation.

The association has an employment department, and through this has been able to select workers of training and experience. Communities in all parts of the United States and also many in foreign lands have been aided through correspondence. As a part of its educational and propaganda work the association publishes a monthly magazine, *The Playground*, and many pamphlets on all phases of recreation work. At the request of the War Department Commission on Training Camp Activities the association is now sending community organizers into each of the cities near the training camps to organize the social and recreational life of the communities for the benefit of the soldiers in their free time. This is known as War Camp Community Service. The officers of the association in 1917 were: President, Joseph Lee; first vice-president, H. P. Davison; secretary, H. S. Brancher; treasurer, Gustavus T. Kirby. Theodore Roosevelt is honorary president.

PODOLIA. A government of southwestern Russia, lying east of the Austrian crownland of Galicia and between the Russian governments of Volhynia, on the north, and Bessarabia on the south. The area is stated at 16,224 square miles, which is about twice the size of Massachusetts. Population, 4,127,600, according to the estimate of January 1, 1915. Agriculture is important, the soil resembling that of the State of Iowa and the chief products being cereals and beet sugar. Before the great war

Podolia exported many horses, cattle, and sheep to Austria-Hungary. The capital is Kamenets Podolsk; prior to the war it had an estimated population of 52,000, fully one-half being Jewish.

POETRY. See LITERATURE, ENGLISH AND AMERICAN, and articles on foreign literatures.

POET SCOUT. See CRAWFORD, JOHN.

POISON GAS. See GAS POISONING.

POLA. The Austrian naval base. See ISTRIA.

POLAND. Formerly a European kingdom; now a territory known sometimes as Russian Poland and belonging to Russia, but not included in Russia proper. At the time of its greatest extent, the kingdom embraced what is now Russian Poland, Livonia, Courland, West Russia, part of eastern Prussia, Galicia, and the western part of Little Russia.

Poland (that is, Russian Poland) has an area of 43,946 square miles, divided among the following nine governments: Kalisz, Kielce, Lomza, Lublin, Piotrków, Plock, Radom, Suwalki, and Warsaw. The estimated population, January 1, 1914, was 12,247,600 (9,226,300 rural, 3,021,300 urban). At the last Russian census (1897), 71.8 per cent of the population was Polish, 13.5 Jewish, 6.7 Russian, 4.3 Germanic, and 3.3 Lithuanian. About three-fourths of the people are Roman Catholic. Prior to the great war the population of Warsaw, the capital, was about 909,000; Lodz, about 40,000; Sosnowiec, nearly 100,000. See WAR OF THE NATIONS.

POLAR RESEARCH. The principal events connected with polar exploration during 1917 were the rescue of Shackleton's auxiliary party by the relief expedition to Ross Sea; the return after years of absence of the MacMillan expedition from its fruitless efforts to locate the mythical Crocker Land; definite information of the fate of the Russian attempt under Brussilof to make the Northeast Passage; and the safe return to the Arctic coast of America of the northern party of Stefansson's Canadian expedition. The proposed attempt of Amundsen to cross, by drift with the ice-floes, the Arctic Ocean from Bering Strait to Spitzbergen Sea, was postponed until the termination of the war.

ARCTIC EXPLORATIONS. The only Arctic work in the way of search for unknown islands was the continuation of explorations already in progress. The Canadian Arctic Expedition consisted of two parties, the northern under Stefansson personally, and the southern under Dr. R. M. Anderson. The last-named official returned in 1916, and his report on his important scientific work was published in the annual *Report of the Naval Service*, for 1917. Stefansson kept the field, his work being confined to the region to the northwest of Banks Land and Prince Patrick Island. Beyond the report that he had discovered several large islands in the sea to the north of Alaska, no definite information was available. Stefansson returned to the delta of the Mackenzie River, where he was to pass the winter of 1917-18.

Baffin Land. Belated reports of Munn's explorations of little-known Baffin Land, 1914-15, indicated decrease of the native population, and the absence of alluvial gold.

Crocker Land Expedition. This expedition under Prof. D. B. MacMillan was initiated in 1911 to explore the land reported by Peary as discovered by him in 1906. From their base at Etah, Greenland, MacMillan and Green reached 82° 30′ N. latitude, 102° W. longitude, the charted location, whence no land was in sight: it was evidently non-existent. Green and other members returned via sledge to Upernivik and thence to the United States. MacMillan remained with the rest of the members at Etah awaiting a relief steamer. Two efforts to reach them failed, but in August, 1917, the *Neptune* brought the expeditionary force with its collections to Sydney, Cape Breton. In 1916 MacMillan made from Etah a sledge journey of fifty-six days, covering 1350 miles of travel. Crossing Ellesmere Land, and skirting the south shores of Heiberg and Ringnes Islands, he reached Finlay Island of McClintock's explorations, 1853. It is notable that MacMillan was then within less than 250 miles of the land discovered by Stefansson to the west. Renewing his field work in 1917, MacMillan made two journeys along the west shore of Ellesmere Land, surveying it from Cape Sabine southwards to Clarence Head, in about 76° 40′ N. He confirms previous reports that this coastland is largely ice-covered, and adds details of enormous glaciers and several new islands. At Cape Isabella he found records of Nares and Young, 1875-76. Scientific collections of value were made during all his journeys.

Brussilof Expedition. The fate of this Russian expedition, which attempted the Northeast Passage, is now known. Its ship, *Saint Anne*, was beset in Kara Sea, whence she drifted for 524 days, a distance of 1540 nautical miles. Her course was from Yalmal Peninsula north, off the coast of Franz Josef archipelago, to 82° N., and then northwest to a point fifty miles north of Prince Rudolph Island. Part of the crew left her in April, 1914, when she was drifting northeast into the Arctic Ocean. Her soundings reveal the continental shelf much nearer Franz Josef Land than was anticipated.

Bear Island. The most important arctic research materially was that made on this desolate island, about 200 miles north of Norway. Norwegian scientists discovered coal veins of extensive quantity and of good quality, the strata on the north coast being nearly six feet in thickness, and easily mined. The exploitation of these deposits was commenced by a Norwegian company. A summer force of forty men, and a small permanent colony made progress. A wireless service was being installed, and the construction of harbor facilities was contemplated.

ANTARCTIC. The Shackleton expedition, which planned to cross the continent of Antarctica from Weddell Sea to South Victoria Land, completed its efforts in 1917. As before recorded, the main party endeavored to establish a base near Coats Land, Weddell Sea. The *Endurance* was beset, and after a drift of hundreds of miles in ten months was crushed in 69° S., 52° W. Meanwhile new land, Caird Coast, was discovered in about 77° S., 40° E., some 200 miles in extent and glacier-covered. By a journey beset with hazards the shipwrecked party reached Elephant Island, their boats nearly useless. Leaving twenty-three men on the island, Shackleton with five others made a desperate voyage in a whale boat, about 800 miles to South Georgia for help. After three failures, Shackleton was successful in the fourth attempt to rescue the imprisoned men. Meanwhile disaster threatened the safety of the auxiliary party, which had reached Cape Crozier, Ross Sea, where it was to await Shackleton's coming across Antarctica. While discharging cargo the *Aurora* was driven from her moorings by a violent blizzard. Beset in the pack she drifted helpless 1200 miles in ten months to the north, and returned to New Zealand for repairs. Capt. McIntosh and nine men were ashore when the ship was driven seaward, but fortunately there was food enough for the winter. In December, 1916, Shackleton sailed for Cape Crozier, whence he brought back the seven survivors in February, 1917. McIntosh and two others perished during the winter—two in a blizzard and one by disease.

POLIOMYELITIS. Efforts were made during the epidemic of infantile spinal paralysis in 1916 to develop a serum treatment of this disease. Serum from recovered patients was used with very indefinite results. The most promising immune serum appears to be that of Rosenow, who reports fifty-four patients treated with immune horse serum during an epidemic in Davenport, Iowa, with a mortality of only 8 per cent, as against twenty-three patients in the same epidemic untreated or treated in other ways, with a death rate of 35 per cent. Six of Rosenow's patients were moribund when the serum was injected, sixteen of the cases were in the preparalytic stage, and all of these recovered. Nuzum and Willy treated 159 patients with a mortality rate of 11.3 per cent. Of 100 untreated patients admitted during the same period of time into the hospital, 45 per cent died. The serum as prepared and given by Rosenow, was that of a horse which had been immunized by successive injections of streptococci, isolated from the central nervous system of monkeys infected with poliomyelitis by means of a virus. In treatment the routine procedure consists of making a spinal puncture for diagnostic tests and for the relief of intraspinal pressure, from 5 to 30 c.c. of spinal fluid being withdrawn slowly. If the tests were positive an injection of serum was given at once. The serum is activated with complement by adding one part of fresh guinea-pig serum to nine parts of immune serum and incubating at 37 degrees C. for one hour. It is then diluted with equal parts of 0.85 per cent salt solution. This preparation is injected slowly into a superficial vein within thirty-six hours after activation, 2 c.c. being injected per minute, and the dose varying according to the age of the patient and the severity of the symptoms, from 6 to 14 c.c. of the mixture in babies, up to 10 to 20 c.c. in older individuals. Repeated injections are given in from eight to twenty-four hours until a recession of the symptoms is noted.

POLITICAL AND SOCIAL SCIENCE, American Academy of. In December, 1917, the membership of the academy was 6263, with a subscription list of 1052. The president of the academy is Dr. L. S. Rowe; the secretary, Dr. J. P. Lichtenberger; the editor, Dr. Clyde L. King. The twenty-second annual meeting will be held April 26-27, 1918. During the year the following bi-monthly publications (*The Annals*) were issued: January, "The Present Labor Situation;" January Supplement, "The Purposes and Ideals of the Mexican Revolution;" March, "Modern Insurance Problems;" May, "Stabilizing Industrial Employment;" May Supplement, "The Mexican Constitution of 1857 compared with the Mexican Constitution of 1917;" July, "America's Relation to the World Conflict and the Coming Peace;" September, "Justice Through Simplified Legal Procedure;" November, "The World's Food."

POLITICAL ECONOMY. The Year Book contains numerous articles treating matters of economic import. Under Financial Review is given a general survey of business and financial conditions in the United States, Great Britain, France, Germany, Russia, Japan, and Canada. Under Labor will be found references to subjects treating various aspects of industry; and likewise Banks and Banking includes information regarding banking developments at home and abroad and gives references to other related articles. See also Food Control; Insurance; Old Age Pensions; Prices; Social Economics; Sociology; Tariff; Taxation; and Trusts.

The American Economic Association held its thirtieth annual meeting at Philadelphia December 27-29. At the same time were held sessions of seven other associations, including the Political Science, Sociological, Statistical, Labor Legislation, Historical, Farm Management, and Accounting Instructors. The general topic of the Economic Association programme was "War and Reconstruction." At a joint meeting addresses were given by President John R. Connors of the Economic Association on "Economic Reconstruction"; by Munroe Smith of the Political Science Association on "The Nature and Future of International Law"; and by George E. Howard of the Sociological Society on "Ideals as a Factor in Future Control of International Society." Among other addresses were the following: "Federal Taxes upon Income and Excess Profits" by T. S. Adams; "Farm Management Investigations Relative to Utilization of Land" by W. J. Spillman of the United States Department of Agriculture; "Present Valuation of Railroads by the Interstate Commerce Commission" by John Bower of Princeton University. In a session devoted to problems of the employment of labor the following papers were read: "Federation of City, State, and Federal Systems of Employment Offices" by Henry R. Seager of Columbia University; "Lessons from English Labor Experiences during the War" by M. B. Hammond of Ohio State University; and "Plan of the Department of Agriculture and Its Operation" by E. B. Wilcox of that department. Papers of interest to members of the Sociological Society included "Social Control of the Accumulation and Distribution of Wealth" by E. C. Hayes of the University of Illinois; and "Motives of Economic Life" by Carleton H. Parker of the University of Washington. There were two papers by Professors Benjamin M. Anderson, Jr., of Harvard University and Irving Fisher of Yale University on problems relating to prices and the value of money. Another general topic considered was "Government Activity in War Time" with papers on "Coöperation with the States" by Arthur W. McMahon of the Council of National Defense; and "New Problems of Governmental Efficiency" by Arthur W. Holcombe of the Federal Bureau of Efficiency.

Bibliography. Below is given a classified list of some of the more important books published during the year. Additional bibliographies of interest will be found under Agricultural Credit; Arbitration and Conciliation, Industrial; Charities; Child Labor; Occupational Diseases; Old Age Pensions; Pensions for Mothers; Social Economics; Sociology; Women in Industry; and Workmen's Compensation.

Transportation and Commerce: Homer B. Vanderblue, *Railroad Valuation; Official Proceedings* of the Fourth National Foreign Trade Convention held at Pittsburgh, January 25-27, 1917; W. M. Acworth, *Historical Sketch of Government Ownership of Railroads in Foreign Countries;* H. W. Blake and W. Jackson, *Electric Railway Transportation;* E. J. Clapp, *Railway Traffic;* M. Wymond, *Government Partnership in Railroads;* Library of Congress, *List of Publications Pertaining to Government Ownership of Railways;* C. E. Grunsky and C. E. Grunsky, Jr., *Valuation, Depreciation, and the Rate-base.*

Money and Banking: H. W. Wolff, *Cooperative Credit for the United States.* Second and third reports of British Departmental Committee on *Increase of Prices of Commodities Since the Beginning of the War;* Department of Commerce, *Wholesale Prices of Leading Articles in United States Markets, January, 1914, to December, 1916;* M. B. Foster, *Banking.*

Population: Havelock Ellis, *Essays in War Time; Further Studies in the Task of Social Hygiene;* G. Bodard and V. L. Kellogg, *Losses of Life in Modern Wars: Austria-Hungary, France* (1916); René Worms, *Natalité et régime successoral;* Grace Abbott, *The Immigrant and the Community;* W. J. Robinson, *Eugenics, Marriage, and Birth Control;* British Registrar-General, *Births, Deaths, and Marriages, England and Wales* (1915); Bureau of the Census, *The Blind in the United States* (1910).

Business Organization and Methods: Charles W. Holman, *Marketing and Farm Credits;* Ralph S. Butler, Herbert F. DeBower, and John G. Jones, *Marketing Methods and Salesmanship;* Ralph S. Butler, *Marketing Methods;* John C. Jones, *Salesmanship and Sales Management;* W. H. Lough, *Business Finance;* F. A. Parkhurst, *Applied Methods of Scientific Management,* 2d ed.; P. P. Wahlstad, *Credit and the Credit Man;* W. H. Walker, *Corporation Finance;* Francis L. Stetson, James Byrne, Paul D. Cravath, George W. Wickersham, Gilbert H. Montague, George S. Coleman, and William D. Guthrie, *Some Legal Phases of Corporate Financing, Reorganization, and Regulation;* W. F. Gephart, *The Principles of Insurance, Vol. I. Life. Vol. II. Fire;* E. R. Hardy, *Insurance;* Boris Emmet, *Profit Sharing in the United States;* O. H. Benson and G. H. Betts, *Agriculture and the Farming Business;* A. W. Atwood, *How to Get Ahead; Saving Money and Making It Work;* J. T. Brand, *The Business of Trading in Stocks;* R. S. Butler, H. F. DeBower, and J. G. Jones, *Market Methods and Salesmanship;* A. H. Church, *Manufacturing Costs and Accounts;* J. H. Gray, *How Does Industrial Valuation Differ from Public-utility Valuation?;* W. F. Kemble, *Choosing Employees by Mental and Physical Tests;* P. D. Leakem, *Depreciation and Wasting Assets: and Their Treatment in Computing Annual Profit and Loss;* J. T. Madden, *Accounting Practice and Auditing;* T. W. Mitchell, *Accounting Principles;* P. H. Nystrom, *Retail Store Management;* C. E. Woods, *Unified Accounting Methods for Industrials;* G. H. Montague, *Business Competition and the Law;* W. H. S. Stevens, *Unfair Competition;* Melvin T. Copeland (Ed.), *Business Statistics.*

Economic History: Clarence W. Alvord, *The Mississippi Valley in British Politics,* 2 vols.; William Cunningham, *The Progress of Capitalism in England;* G. B. Dibblee, *Germany's Economic Position and England's Commercial and Industrial Policy After the War;* H. S. Furniss, *The Industrial Outlook; Being Essays on Construction by Various Authors;* Yves Guyot, *Les causes et les conséquences de la guerre;* F. A. Ogg, *Economic Development of Modern Europe;* R. Peret, *La population, le budget, la fortune et la dette publique de la France, de ses allies et de ses ennemis avant la guerre;* A. D. Smith, *Rates of Postage. An Historical and Analytical Study;* H. Hauser, *Germany's Commercial Grip of the World;* E. G. Strutt and others, *British Agriculture. The Nation's Opportunity;* Charles J. Brand, *Meat Situation in the United States. Part I, Statistics of Live Stock, Meat Production, and Consumption, Prices and International Trade. Part II, Live Stock Production in the Eleven Far Western Range States. Part III, Methods and Cost of Growing Beef Cattle in the Corn Belt. Part IV, Utilization and Efficiency of Available American Feed Stuffs. Part V, Methods and Cost of Marketing Live Stock and Meats;* R. M. Tryon, *Household Manufactures in the United States, 1640-1860;* J. S. Davis, *Essays in the Earlier History of American Corporations;* L. Dominian, *The Frontiers of Language and Nationality in Europe,* published for the American Geographical Society of New York; Ernst Freund, *Standards of American Legislation. An Estimate of Restrictive and Constructive Factors;* H. R. Hodges, *Economic Conditions, 1815 and 1914;* Margaret Pease, *Jean Jaurès, Socialist and Humanitarian.*

POLITICAL PARTIES. See United States.

POLO. The American Polo Association cancelled all its championship tournaments for 1917 because of the war, which called a majority of the star players into the army. The game was played, however, at the various camps and matches were held at the Rockaway Hunt and Rumson Country clubs for the benefit of the Red Cross. A tournament held in July at the Rockaway Club netted $7000 for this cause.

POOL. See Billiards and Pool.

PORCELAIN. See Anthropology.

PORK. See Stock Raising and Meat Production.

PORTER, Robert Percival. An American journalist, industrial export, and author, died in London, England, February 28, 1917. He was an Englishman, having been born in Norwich in 1852, and although later naturalized as an American citizen, before his death he took out papers to regain his original allegiance. At twenty he was in the United States and beginning newspaper work on the Chicago *Inter-Ocean.* In 1880-81, as expert on the United States Census, he reported on wealth, debt, taxation, and transportation, and in 1882 he was tariff commissioner. After four years on the editorial staffs of the New York *Tribune* and the Philadelphia *Press,* he, with Frank Hatton, founded the New York *Press* in 1887. Again in 1890-94 he was connected with the census, this time as director. President McKinley appointed him special fiscal and tariff commissioner to Cuba and Porto Rico in 1898 and the next year he arranged with Gen. Gomez for disband-ing the Cuban army. Since 1904 Mr. Porter had been on the staff of the London *Times*, for which he edited the first edition of an *Engineering Supplement* and many other supplements on countries, industries, and the great war. From 1906 to 1909 he was correspondent of the *Times* at Washington. He traveled widely, and wrote much on economic and other subjects, publishing, besides many articles, *The West in 1880*, *Breadwinners Abroad*, *Free Trade Folly*, *The Commerce and Industry of Japan*, *Life of William McKinley*, *Industrial Cuba*, *Lectures and Addresses on Municipal Ownership*, *Dangers of Municipal Ownership*, *The Full Recognition of Japan*, and *The Ten Republics*.

PORTO RICO. Area and Population. The area of the island is 3435 square miles. The population in 1910 was 1,118,012, and the estimated population in 1917 was 1,300,000.

Agriculture. All the industries of the country have their basis in agriculture. The chief products are sugar, tobacco, and fruits. The board of commissioners of agriculture have carried on effective work for several years in the stimulation of agriculture throughout the island, and in introducing advanced methods of cultivation. A new department of agricultural labor, made possible by the approval of the new organic law, was begun on March 2, 1917, and the work of the Board of Commissioners of Agriculture, including the insular experiment station and the Bureau of Labor were at once assigned to the new department.

Commerce. The economic prosperity of Porto Rico, which began in 1915, was continued through 1916 and still existed in 1917. There was a general though varying increase in wages, and there were less unemployed than had existed in any time in recent years. The external trade in 1917 reached a total value of $134,516,141, which is about $29,000,000 more than the figures for 1916, which in turn surpassed those of any previous year. The increase was about evenly distributed between the exports and imports. The increase in the sugar exports was very marked, both in quantity and value. The increase in value was more than $8,000,000, or about 18 per cent, and in quantity, 63,988 tons or about 15 per cent. In the exportation of articles other than sugar, there was an increase of about $6,000,000. About $4,000,000 of this was for the items of tobacco and coffee, and cigarettes. The exportation of cigarettes and tobacco recovered from the decline of 1916, and reached the highest level ever recorded. Coffee only partially recovered from the decline in 1916, due in part, at least, to a decline in prices. The imports in 1917 reached a total value of $53,545,244, or $14,594,068, more than the value in 1916. The imports from the United States gained in value $13,646,734, and amounted to $49,539,249. Over 91 per cent of all the external trade was carried on with the United States. While internal business showed every evidence of increased activities during the year, there was no sign of inflation or overexpansion due to wild speculation. During the year there were organized twenty new domestic corporations and nine foreign corporations. Of the domestic corporations over one-half were for agricultural and mercantile purposes.

Education. Special emphasis was laid, during the year, upon increasing the efficiency of the educational system as a whole, rather than attempting to concentrate attention upon the increase of the number of pupils enrolled. To this end much time and effort were devoted to the better grading of pupils, closer supervision of instruction, raising the standard of teachers, and better adaptation of the courses of study to the needs and abilities of the pupils. The total number of pupils enrolled during the year were 152,063. The teachers numbered 2676. Much greater stress was placed upon the rural schools, which had hitherto been relatively neglected, and the enrollment in these schools showed a greater relative number than that in the urban schools. Of the total number of pupils enrolled 85,715 were male and 64,637 were females. The white pupils numbered 119,119 and the colored 31,233. There were 1675 female and 1001 male teachers. All but 193 of these teachers were natives. The schools were carried on in 1666 different buildings of all sorts and sizes. The total expenditures for school purposes during the year were $2,106,389, an increase of $266,373 over the expenditures of 1916.

Health and Sanitation. In 1917 a new Department of Health was formed to care for the sanitation of the island. During the year there was an unusually widespread and virulent epidemic of measles. The increased mortality rate for the year caused much alarm. It was 28.5 per 1000, the highest rate in seven years. This was partly due to the general high cost of foodstuffs, and the condition was aggravated by the destruction by cyclone of the plantain and banana trees, the source of a large part of the food of the poor throughout the island. The investigations of the Tropical Medical and Hygiene Institution continued along the same lines as in former years and valuable results were obtained.

Finance. The total receipts of the treasury for the fiscal year amounted to $10,937,947. There was a balance at the beginning of the year of $2,901,648. The total expenditures were $10,356,471, leaving a balance at the end of the year of $581,476. The total bonded indebtedness of the government was increased during the year by $1,000,000. The increase was for irrigation purposes and for refunded bonds under on act of the school board at San Juan. The total outstanding debt on June 30, 1917, was $9,280,000.

Charities and Corrections. The charitable and correctional institutions include the Girls' Charity Schools, the Boys' Charity School, the Reform School, the penitentiary, and jails. There were in the Girls' Charity School at the end of 1917, 175 inmates, and in the Boys' Charity School, 270. The District Court disposed during the year of 1800 criminal cases.

Politics and Government. On March 2, 1917, the president approved the new organic act for Porto Rico. It was received everywhere with great satisfaction and many celebrations were held in various municipalities. The people were especially pleased in the granting of American citizenship. The new government was promptly put into effect. By the terms of the law the legislative power in Porto Rico is vested in a Legislature consisting of two houses. The Senate consists of nineteen members elected for four years. The House of Representatives consists of thirty-nine members elected for a term of four years. The members of the Senate and House of Representatives receive $7.00 per day for ninety days of each session. Sessions are held biennially. The next session will be held the second Monday in February, 1919. The designation of the qualifications for suffrage is left to the Porto Rican legislature. Both branches of the legislature are to be elected by the voters, but its action must be approved by Congress and by the governor, who is appointed by the president. A commissioner to represent the island in Congress is appointed by the people.

The entrance of the United States into the war brought to Porto Rico many new problems and difficulties. Among the most serious of these was the peril of interrupted communication with the continents, and the loss of ships engaged in trade. This possibly tended to increase the price of foodstuffs, which was already abnormally high. In view of these conditions a law was passed creating a food commission with wide powers and with authority to borrow, with the approval of the governor, as much as $1,000,000,000 if necessary, to provide food for the people. The commission so effectively carried out its duties, that speculation in food products was practically eliminated, and prices were held at reasonably low levels. After the enactment of the compulsory military service law, the Porto Rican people showed a commendable spirit of patriotism and loyalty to their new citizenship. After the full time allowed for the renunciation of citizenship was passed, it was found that not over 290 people in the whole island had made this renunciation, while over 800 persons born in Porto Rico of alien parents voluntarily made a sworn declaration of allegiance to the United States, and accepted American citizenship. Soon after the declaration of war, a Porto Rican chapter of the American Red Cross was organized. The people willingly joined in the activities of this great organization. They were also quick to subscribe to the Liberty Loan issues, and in other ways indicated their devotion and loyalty to the United States.

Legislation. The third session of the eighth legislative assembly convened on February 12, and adjourned on April 2, 1917. After March 2, when the new Organic Act was approved, the legislature decided to postpone many important matters for the action of the new legislature, which under the citizenship bill, was to be elected in July and to meet in August. The joint resolution was passed providing for the holding of general elections and to provide for the nomination of candidates. Most of the other measures enacted were of local importance and interest.

Government Officers. Governor, Arthur Yager; Secretary, Ramon Pacheco; Treasurer, Jose E. Benedicto; Auditor, J. W. Bonner; Attorney-General, Howard L. Kern; Commissioner of Education, Paul G. Miller; Commissioner of Interior, Manuel V. Domenech; Commissioner of Agriculture and Labor, Manuel Camurnas.

Judiciary. Chief Justice, Jose C. Hernandez; Justices, Emilio del Toro, Adolph G. Wolf, Pedro de Aldrey, and Harvey M. Hutchison; U. S. District Judge, Peter J. Hamilton; U. S. District-Attorney, Miles M. Martin.

PORTUGAL. A European republic occupying the western coast of the Iberian Peninsula; the most westerly country in Europe. Capital, Lisbon.

Area and Population. The following table shows the area by provinces, with the population according to the census of December 1, 1900, and the census of December 1, 1911:

Provinces	*Area in sq. miles*	*Population 1900*	*Population 1911*
Entre-Douro-e-Minho ..	2,790	1,170,361	1,289,066
Tras-os-Montes	4,164	427,858	437,571
Beira Alta	4,511	1,037,596	1,112,374
Beira Baixa	4,699	478,238	512,800
Estremadura	6,939	1,231,418	1,440,761
Alemtejo	9,222	416,105	482,275
Algarve (Faro)	1,938	255,191	272,861
Total continent	34,263	5,016,267	5,547,708
Total islands	1,237	406,865	412,348
Grand total	35,500	5,423,182	5,960,056

Population of principal towns will be found in the 1916 Year Book.

Production and Supplies. A new department, attached provisionally to the Ministry of Labor under the designation, department of agricultural mobilization, was created at the end of 1917, to continue in force during the war and for two years after its cessation, for the purpose of encouraging and increasing production. Cattle, motor machinery, and implements will be rented to the farmers; fertilizers and seeds will be furnished on credit. Loans and gratuitous technical assistance will be furnished those who cultivate new land and land rented or requisitioned by the government. Cattle breeding is to be encouraged. In order to meet payments for orders immediately necessary, resulting from the operations and services to which the decree refers, there is a permanent fund of 100,000 escudos at the disposition of the Ministry of Labor, which will be empowered to dispense with formalities prescribed by the laws and regulations of public accounting.

Owing to the difficulty of securing supplies of foreign coal, anthracite mines in the vicinity of Oporto have been put in operation. Before the war, coal was sold at about 28s. per ton c. i. f. Cardiff coal was selling in February, 1917, at 150s. ($37). The fuel scarcity was a serious problem. Thousands of tons of wood were used by the railways, factories, and lighting establishments. All the fast-train services were cancelled, with the exception of the train to Madrid three times a week and one between Oporto and Lisbon. New regulations with respect to public lighting, theatres, etc., reduced the fuel famine somewhat. Some thousands of tons of Pocahontas coal were imported during the year. The price was higher than Cardiff, owing to excessive freights, which reached $14 a ton in American schooners, and these were discontinued.

Portugal's most profitable exports are corkwood, wine, and sardines. The exceptional demand, especially in the United States, accounted for extra shipments which otherwise might have been left in the hands of the producers. Freights to New York did not reach the unusually high rates prevailing for eastbound merchandise, and shippers were able to obtain sufficient cargo space at comparatively low rates.

The wine industry prospered. Owing to the demand from France, prices advanced to a high level and old stocks were practically cleared out. The wine production for the last five years is as follows: 1912, 117,380,423 gallons; 1913, 103,620,678; 1914, 126,011,678; 1915, 90,200,343, and 1916, 144,410,280 gallons.

Portuguese sardines were in demand by the Allies and the United States at prices double those of the previous year. Profits to the packers were lessened by the increased cost of raw material, such as tin plate, wire for keys, solder, etc. About 262,000 cases of tin plate were imported and sold as high as 56 escudos a case (before the war 9 escudos). Even at the high price little tin plate was to be had at the end of the year owing to the British export restrictions. Although the run of fish was normal, packers were handicapped by lack of ships and fishing material.

An unofficial source gives the 1916 production of important agricultural production as follows: 7,115,790 bushels wheat, 2,676,107 bu. rye, 3,189,078 bu. oats, 1,158,461 bu. barley, 1,102,400 bu. beans, 1,709,527 cwts. potatoes.

Commerce. The export from Portugal and adjacent islands of cereals and foodstuffs of all descriptions, linseed, and raw cotton is prohibited; and the reëxportation, transit, and transhipment of such articles is also prohibited when the consignments on arrival in Portugal or adjacent islands are unaccompanied by a clear indication of the final destination, duly provided at the port of departure. In the following table are given A imports, B exports, C1 colonial reëxports, and C2 foreign reëxports for two years in escudos:

	A	*B*	*C1*	*C2*
1915 ...	44,463,000	15,004,000	15,000,000	6,691,000
1916 ...	65,384,000	29,571,000	16,806,000	7,875,000

The depression caused by a falling off in the tonnage of shipping calling at the principal ports of Portugal during 1916 was offset by the demand for the products of the country, which sold in foreign markets at greatly increased prices. The value of the over-sea import and export trade of the port of Lisbon for 1916 was 119,636,000 escudos, compared with 81,158,000 escudos in 1915.

The principal articles exported from Lisbon, values in escudos, were as follows:

	1915	*1916*
Beverages	127,204	186,132
Copper ore	212,778	128,995
Cork plugs	465,501	621,993
Cork shavings	268,301	357,845
Cork wood	1,796,124	1,750,191
Cotton, raw	709,878	852,893
Cotton goods	169,541	288,640
Flour	879,603	488,686
Lumber	417,879	457,113
Olive oil	634,284	641,803
Potatoes	51,003	32,500
Salt	51,424	86,000
Vegetables	288,477	276,436
Vinegar	31,908	39,384
Wine	2,639,406	10,202,170

The United States in 1916 took from Lisbon goods valued at $7,513,694, as compared with $5,139,766 in 1915. The increases, as shown in the declared export returns, were in cocoa (from the Portuguese colonies), corkwood, sardines, chestnuts, figs, and goatskins. There was a falling off in the exports of crude rubber (from the colonies). Shipments of figs increased from 2,590,141 pounds, valued at $112,918, in 1915, to 15,303,436 pounds, valued at $614,978, in 1916. The German market, usually supplied through Holland, was not available, and the shortage of Turkish figs in the American market was made up by the fruit of the Algarve and Alemtejo. The total exports of wine show an increase of nearly 9,000,000 gallons, compared with 1915, the total shipments being 22,456,143 gallons, against 13,532,889 gallons in 1915. With the high freights and insurance, and low exchange, importers experienced great difficulties. In addition to the extensive purchase of motor trucks and automobiles for the use of the government, local importers brought in American drugs and chemicals, soaps and toilet articles, machinery, typewriters, leather, hardware, piece goods, pianos, etc., in unusual quantities. Imports of raw materials and foodstuffs have always constituted a large per cent of the imports from the United States and the volume of this business was about normal. Many makes of American motor cars appeared on the market and were in good demand despite the fact that freights reached $600 to $800 a vehicle. Importations of the Vacuum Oil Co. for the year were as follows: Refined oil, 96,782 barrels; naphtha, 38,069 barrels; lubricants, 31,100 barrels. These figures show a decrease in refined oil and naphtha, as compared with 1915, due to two factors: (1) high freight rates which forced the company to make an average increase of 1.50 escudos per case in refined oil, and 2 escudos per case in naphtha, resulting in the curtailment of purchases by customers; and (2) the daylight-saving system, which proved a great economy of illuminants.

Finance. In 1915 the value of the escudo fluctuated around $0.70 American currency; at the beginning of 1917 it was about $0.62. The great increase in the issue of paper money had its effect in the reduced purchasing power in foreign exchange of the paper escudo. At the end of the year a draft on New York cost approximately 1.60 escudos per dollar. Exchange on London was quoted at the end of March, 1916, at 34*s.* 7-8d.; at the end of June, 35*s.* 3-16d.; and at the end of December, 31*s.* 7-16d. Owing to the difficulty of importing gold, the Bank of Portugal strengthened its reserve by depositing £100,000 in the Bank of England. Drafts to the number of 81,375, valued at 61,951,000 escudos, were discounted. Deposits were 582,735,785 escudos. The fiduciary circulation was 140,377,915 escudos on December 30, 1916, or an increase of 25,375,966 escudos over 1915. The annual report of the Bank of Portugal shows increase in financial transactions for 1916 as compared with 1915. The total movement of the main and branch offices was 1,899,932,674 escudos, compared with 1,359,847,748 escudos in 1915.

The table below gives from a British source revenue and expenditure for comparative years (budget estimate):

	1915-16	*1916-17*	*1917-18*
Revenue	£17,344,140	£17,220,047	£15,466.444
Expenditure ...	18,776,878	17.623,467	15.452,774

The same authority states the debt, June 30, 1916, as follows: £38,511,461 external, £134,654,306 internal.

Government and History. The president, elected for four years, is the executive. The legislative power is exercised by a Congress composed of a chamber of deputies (164 members) and a senate (71 members). Bernardino Machado was elected president August 6, 1915. The prime minister, Antonio J. Almeida, who had been in power since March, 1916, resigned with his entire cabinet on April 21 on account of the adverse vote of the Chamber of Deputies on a government measure. A new ministry succeeded on April 25 under Dr. Alfonso Costa. On December 5 there occurred a military revolution whose causes at the time were not known. Three days of fighting followed in the course of which seventy to ninety persons were reported killed and between 350 and 400 wounded. Finally in order to avoid further bloodshed both parties agreed to desist. On December 8 the revolutionaries published the following manifesto: "The revolutionary forces comprising almost the entire garrison of Lisbon have fought for three days entrenched in the King Edward the Seventh Park for the salvation of the Fatherland and the republic menaced by a miserable government composed almost entirely of monarchists. The revolutionaries will now form a cabinet of serious-minded and capable men who will seek to administer the country with a régime of equality, liberty, and tolerance under which all can live. We solemnly affirm that we shall continue to stand by the side of our ancient ally, Great Britain, and all our other allies, undertaking for our part to fulfill all the international obligations entered into in the name of the Portuguese nation." By December 9 it was reported that order had been restored. The leader of the revolutionary force was Major Sidonio Paes, former minister at Berlin and in 1911 commander of public works. The programme which was under discussion for the new government involved the following points: Keeping faith with the Allies in regard to the Portuguese part in the war; formation of a constitutional ministry; reëstablishment of public order; and early constitutional reform. Major Sidonio Paes became president pending an election.

PORTUGUESE EAST AFRICA (Mozambique). A Portuguese colony on the east coast of Africa. Area, 293,860 square miles; population about 3,120,000. Capital, Lourenço Marques, with about 10,000 inhabitants, nearly half Europeans. Lourenço Marques is also one of the principal ports; other ports are Mozambique, Beira, Inhambane, and Chinde. The leading products are rubber, sugar, coconuts, beeswax, and minerals. Coal and gold occur. A considerable part of the trade of British South Africa passes through Beira and Lourenço Marques and thence by the Beira or the Delagoa Bay Railway (the former 204 miles, the latter 57 miles, within the colony). The Beira railway connects with the British line from Salisbury, and the Delagoa Bay Railway with the line from Pretoria. A line from Lourenço Marques to the Swaziland border is under construction. The Gaza line from Chai-Chai to Manjacase has 32 miles in operation, and that from Mutamba to Inharrime 25 miles. Work on the proposed Mozambique-Nyassaland line was begun in 1914; the total distance is estimated at 342 miles. Arrangements have been made by working agreements between the Portuguese Railway administration and the South African Railways whereby the facilities for transporting coal from the Transvaal collieries to Lourenço Marques will be increased about double the amount of present tonnage. This will be brought about by pooling the engine power of the two railways systems and by reserving certain trucks for coal traffic only. Imports in 1914, 10,511,251 escudos; exports, 4,353,917; reëxports, 8,933,868; transit, 23,798,410. Trade is divided among the state territories, the Mozambique Company, and the Nyassa Company.

PORTUGUESE GUINEA. A Portuguese colony on the west coast of Africa, including the adjacent archipelago of Bijagoz, with the island of Bolama, in which the capital (Bolama) is situated. Area, 13,490 square miles; population, about 820,000. Imports 1914, 1,403,150 and exports, 1,054,890 escudos. The budget for 1916-17 estimated revenue and expenditure to balance at 665,290 escudos. A governor administers the colony.

POSTAL SAVINGS BANKS. See SAVINGS BANKS.

POST OFFICE. See UNITED STATES.

POTASH. See CHEMISTRY, INDUSTRIAL; and FERTILIZERS.

POTASSIUM. See CHEMISTRY, INDUSTRIAL.

POTATOES. The average annual potato crop of the world was estimated at about 5,300,000,000 bushels, over 85 per cent of which was produced in normal times by Germany, Russia, Austria-Hungary, France, the United States, and the United Kingdom, mentioned in the decreasing order of yield. The crop of 1916 was generally low. Complete statistics for the world's crops of 1916 and 1917 were not available at the end of 1917, but from those received it was estimated that Germany, France, the United States, and the United Kingdom, which normally produce about 53 per cent of the world's supply, produced in 1916 only 30 per cent of the world's average crop. In 1917 the yields of most countries were greater than those of the preceding year. Statistics received by the International Institute of Agriculture at Rome, from six countries, including the United States, showed a production 34.8 per cent greater than that of 1916.

The production of the United States, as estimated by the Department of Agriculture, was 442,536,000 bushels and the area 4,390,000 acres, as compared with 286,953,000 bushels and 3,565,000 acres in the preceding year. The average yield per acre was 100.8 bushels or 20.3 bushels higher than in 1916. The average farm value on December 1, 1917, was 122.9 cents per bushel, as against 146.1 cents on December 1, 1916, and the total value of the crop at this rate was $543,865,000. The acreage, yield, bushel value, and total value were all higher than ever had been recorded, but the average yield per acre had been surpassed a number of times. The area planted to early potatoes in Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, and Texas was reported as 189,000 acres in 1917 and 112,000 acres in 1916. The larger portion of this crop in these States is harvested in May and June, but in Florida and Texas the principal harvesting season is in April and May, although the harvest begins in January and the quantity of tubers dug increases from month to month. The commercial acreage of early potatoes for the whole United States was estimated at 281,700 acres and the production provisionally at 33,516,000 bushels. In the spring of 1917 seed potatoes in the United States sold as high as from $4 to $5 per bushel.

The Canadian crop for the year was a little less than 80,000,000 bushels, as compared with

63,000,000 bushels for each of the two preceding years. During the year ending June 30, 1917, the United States exported 2,489,000 bushels, and during the preceding fiscal year 4,017,760 bushels. Owing to the limited supply and to the unsettled political conditions the international trade in potatoes in many countries was subject to governmental regulation. As an instance may be cited a royal order in Spain which permitted the exportation of 5000 tons with an export tax of 41 cents per 100 pounds. In the United States all large handlers were under license to the Food Administration and agreed to make monthly reports including a statement of their fixed charges and to do business at a reasonable profit. See HORTICULTURE.

POWELL, MAUD. See MUSIC, *Artists*, Instrumentalists.

PRAGMATISM. See PHILOSOPHY.

PRAIRIE PROVINCES. The provinces of Manitoba, Saskatchewan, and Alberta, Canada. On the south, the provinces are bounded by the United States, at the 49th parallel; on the north, by the Northwest Territories, at the 60th parallel. The easternmost point of Manitoba is on the shore of Hudson Bay in about 89° W.; Alberta extends west to long. 120° W., about half of its western boundary coinciding with that meridian. The gross area of the Prairie Provinces is estimated at 758,817 square miles, which is equivalent to about 25 per cent of the gross area of the United States. The land area is estimated at 728,233 square miles. The census taken for June 1, 1916, returned a population of 1,698,220 (935,652 males, 762,568 females), as compared with 1,328,725 in 1911, 808,863 in 1906, and 419,512 in 1901. Thus from 1901 to 1916 the population increased by 305 per cent, from 1906 to 1916 by 110 per cent, and from 1911 to 1916 by 28 per cent. See articles on each province and CANADA.

PRATT, BELA LYON. An American sculptor, died in Boston, May 19, 1917. He was born at Norwich, Conn., in 1867. His art education was gained at the Yale School of Fine Arts, at the Art Students' League in New York, and in Paris under Chapu and Falguière and at the Ecole des Beaux-Arts. Among his early teachers was Augustus Saint-Gaudens, whose assistant he was for a time. After winning two medals and two prizes in Paris, Mr. Pratt returned to the United States in 1892 and the next year was appointed to a post he held until his death—that of instructor in modeling at the Boston Museum of Fine Arts. He attracted early notice by two colossal groups on the Water Gate of the Peristyle at the World's Fair, Chicago, and thereafter was constantly engaged in filling commissions. Among medals designed by him were the Eliot medal for Harvard, the Yale Bicentennial medal, and a Longfellow medal. In the Library of Congress he is represented by several figures and medallions and his "Science" and "Art" are placed in front of the Boston Public Library. His recumbent figure of Dr. Coit, for St. Paul's School, Concord, N. H., brought him honorable mention in the Paris salon of 1897. He designed statues of Bishop Brooks, Governor John Winthrop, Jr., Rev. John Cotton, Gen. Stevenson, Nathan Hale, and Edward Everett Hale, busts of Gen. C. J. Paine, Bishop Huntington, Rev. Dr. Herrick, Dr. Richard Hodgson, and others, and memorial monuments at Andersonville, Ga., Harvard University, Malden, New Bedford, Boston, and elsewhere, besides many other works. Mr. Pratt was elected Associate of the National Academy in 1910 and received various awards, including a gold medal at the Panama-Pacific Exposition, in 1915. He was also a member of the Massachusetts Art Commission and of the National Institute of Arts and Letters, and other societies. Harvard conferred on him an honorary M.A. He lived in Jamaica Plain, Mass., and had a studio in Boston.

PRATT INSTITUTE. A non-sectarian co-educational institution in Brooklyn, N. Y. In the fall of 1917 there were 13.173 students and 195 members of the faculty. The students' enrollment was classified as follows: Fine and applied arts, 888; household science and arts, 695; science and technology, 1504; library science, 24; gymnasium, 62. Volumes in the library numbered 114,781. The institute was founded in 1887. President of the trustees, Charles M. Pratt; secretary of the trustees and executive head of the institute, Frederick B. Pratt.

PRESBYTERIAN CHURCH. The total number of Presbyterian Church members in the United States in 1917 was 2,778,624, as compared with 2,708,968 in 1916. The adherents were about 5,000,000. The members and adherents of the Presbyterian and Reformed Churches in the world, all holding the Presbyterian system, number about 35,000,000, not including the 5,000,000 of the Reformed in the Lutheran Church. In the United States there are four larger and several smaller denominations under the Presbyterian system. The largest is the Presbyterian Church of the United States of America, known as the Northern Presbyterians, with 1,604,045 communicants in 1917 (an increase of 44,036 over 1916), 9968 churches, and 9751 ministers. The Presbyterian Church of the United States, known as the Southern Presbyterians, in 1917 had 359,335 communicants. Other Presbyterian churches, which are treated under their own titles, are the Cumberland Presbyterian Church, the United Presbyterian Church, and the Reformed Presbyterians, including several branches in the North and South. A very small body is the Associated Presbyterian denomination, numbering in 1917 about 500 communicants, 14 churches, and 9 ministers.

The Presbyterian Church in Canada in 1917 had 336,822 communicants; the Church of Scotland in Canada in 1917 had 10,000 communicants. The total Presbyterian adherents in Canada were about 600,000. The various Presbyterian Churches in England and Wales in 1917 had 293,166 communicants and about 600,000 adherents. In Ireland in 1917 the Presbyterian communicants numbered 109,760 and the adherents 200,000. In Scotland in 1917 the Church of Scotland had 721,137 communicants, the United Free Church of Scotland 516,075, the Free Church of Scotland 10,000, other Presbyterian churches 10,000. The total number of adherents in Scotland in 1917 was 2,500,000.

The Presbyterian Church of the United States of America is divided into 40 synods, with 291 presbyteries. The Sunday school scholars in 1917 numbered 1,455,466, an increase of 28,258 over 1916. The total contributions for all purposes in 1917 amounted to $31,236,297. Of this amount $21,468,345 were for congregational purposes; $2,194,147 for home missions; $2055 for foreign missions; $626,916 for colleges; and $426,125 for relief and sustentation. The General Assembly is the chief governing body of the church. The missionary work is carried on under the control of the Board of Foreign Missions and the Board of Home Missions. In 1917 there were 27 foreign missions, 170 stations, 1353 missionaries, 6242 native helpers, 940 fully organized churches, 161,470 communicants, 2063 schools, 74,420 pupils, 238,094 pupils in Sabbath schools, 176 hospitals and dispensaries, and 753,911 patients treated annually. The number of pupils, schools, and hospital patients is given as fully as is compatible with war conditions. The board of education controls the educational work of the denomination and provides pastoral care and religious instruction for students in State universities and State colleges. The denomination has 12 theological seminaries, with 87 professors and 44 instructors and lecturers. In 1917 their students numbered 873, of whom 215 graduated. There were in 1917 62 colleges and universities in the United States (connected with or approved by the denomination), with 1659 professors and teachers and 26,385 students. Other important boards are the board of publication and Sunday school work, the board of church erection, and the board of ministerial relief and sustentation.

During the sessions of the General Assembly of 1917, of which Rev. W. J. Wilbur Chapman was moderator; Samuel F. Irwin, vice-moderator; and Rev. Dr. W. H. Roberts, stated clerk, some of the acts passed were the following: Entrusting to the Committee the negotiations for union with the Welsh Presbyterian Church and the Presbyterian Church in the United States; strongly disapproving the use of intoxicating beverages; reaffirming the church deliverances upon marriage and divorce; approving negotiations for organic union with the Presbyterian Church in the United States; extending hearty greetings to evangelical Christians of Russia; disapproving the use of tobacco; resolution asserting belief in the justice, wisdom, and righteousness of the immediate enfranchisement of women. See also RELIGIOUS DENOMINATIONS AND MOVEMENTS.

PRESIDENTS OF COLLEGES, NEW. See UNIVERSITIES AND COLLEGES.

PRICES. One of the most fundamental economic changes of the year was the sharp upward movement of commodity prices and especially the prices of foods and other prime necessities. Affecting every country, this movement was accompanied everywhere by the action of governments to check it. Early in the war Germany had shown the way by the creation of a "food dictator." She was followed by a similar organization in all the Central Powers and later by France and Great Britain; and one of the first steps taken by the Federal Government after the declaration of war was the creation of a Department of Food and Fuel Administration under Herbert C. Hoover. Its activities in price fixing are described below. For a more complete account see FOOD CONTROL. One of the most important causes of the advance in prices in the United States, Japan, Canada, and various neutral countries was the increase in the amounts of gold held by them. See paragraph *Gold Movements* under FINANCIAL REVIEW. Another large factor in all warring nations, and in some neutrals as well, was the issue of enormous quantities of government bonds, treasury notes, and other instruments of credit. It was generally recognized that these became the basis of an even greater expansion of industrial and banking credits and consequent advances in price levels. For some important commodities also the increases were due to relative scarcity in view of unprecedented demand.

UNITED STATES. According to the Bureau of Labor Statistics the average advance of food prices in August, 1917, as compared with the year before the war was 47 per cent. Flour had advanced 130 per cent; it was two and one-quarter times as expensive as in August, 1913; corn meal had advanced about the same; potatoes had advanced 87 per cent; sugar, 77 per cent; lard, 72 per cent; and pork chops, 58 per cent. If the prices of August, 1916, be taken as a basis for comparison the average increase in prices of 27 principal articles of food was in August, 1917, 31 per cent. During this year onions was the only article to decrease in price, while corn meal advanced 98 per cent, flour 70 per cent, beans 59 per cent.

According to *The Annalist* "the average wholesale prices of 25 food commodities selected and arranged to represent a theoretical family's food budget" advanced from a level of 205 at the opening of 1917 to a maximum of 292 late in May; it thereafter dropped until the latter part of July, then rose until the middle of October when it stood at 282; it fluctuated about 280 to the close of the year. These levels may be compared with yearly averages of 80 for 1896, 146 for 1914, 148 for 1915, and 175.7 for 1916. The yearly average for 1917 up to December was 260.

District of Columbia. Following a joint resolution of Congress the Department of Labor made an inquiry into the cost of living in the District of Columbia. The results were summarized in the *Monthly Review* of the Bureau of Labor Statistics for October. Schedules were obtained from 1481 white families and 629 colored, or a total of 2110 families. In all of these the principal bread winner received not over $1800 a year. The average size of family was 4.9 members, including boarders or lodgers; and the average size excluding these latter was 3.7 members. It was found that the incomes of these families were distributed as follows: 245, of whom 65 were white, received under $600; 562, of whom 270 were white, received from $600 to $900; 488, of whom 375 were white, received from $900 to $1200: and 815, of whom 771 were white, received from $1200 to $1800. The report declared that from $900 to $1000 was needed in order to secure "mere creature necessities," while the "American standard of living" would require much more. Nevertheless, it found that 38 per cent of these families had incomes of less than $900 and 61 per cent had incomes of less than $1200. These families averaged 3.4 and 3.5 exclusive of boarders and lodgers. Negro incomes were much lower than white. Thus 29 per cent of the negro families received less than $600 a year, while 75 per cent of them lived on less than $900. Of the white families 23 per cent lived on less than $900 and nearly half of them on less than $1200 a year. In 268 of the families (145 white and 123 negro) there was no male head; in 597 families

(30 per cent white) the wife worked out of the home; in 297 families (two-thirds of them white) one or more children were at work; and in 1112 families (756 of them white) boarders and lodgers were kept. Of all of the families 24.6 per cent showed a surplus of income over expenses; 45.7 per cent came out even; while 29.7 per cent spent more than they received.

STOCKHOLM AND COPENHAGEN. A report of the Swedish labor office showed increases for 22 articles of common consumption in Stockholm, Christiania, and Copenhagen. If prices in July, 1914, be taken as equal to 100 then the average prices for these 22 commodities for Stockholm, Christiania, and Copenhagen were in March, 1917, respectively 195, 202, and 183. For whole milk the prices for the three cities in March, 1917, were respectively 153, 142, and 158; for potatoes, 260, 88, and 196; for yellow peas, 327, 283, and 230; for wheat flour, 128, 206, and 192; for soup beef, 178, 206, and 155; for fresh pork, 188, 249, and 109; for loaf sugar, 106, 196, and 121; for coal, 272, 319, and 409.

NORWAY. The Norwegian statistical office estimated the increase in general wages from July, 1914, to April, 1917, at between 50 and 60 per cent; while the Norwegian Labor Department estimated the increase in the cost of food, fuel, and lighting for an ordinary family at 108 per cent for the same period. If rent and other expenses be included the increase in the cost was only 82 per cent. For specific articles, if the cost in July, 1914, be represented by 100, the following were the prices in May, 1917: meat, 224; fish, 206; fats, 175; bread, 200; flour and cereals, vegetables, 238; coffee, 139; sugar, 210; fuel, 462; clothing, 190; increases in rents and taxes were slight. In consequence of higher prices the consumption of important articles had declined. For meat this decline was 58 per cent; for butter, 56 per cent; for flour and other cereals, 62 per cent; for cheese, 83 per cent; for eggs, 92 per cent; and for potatoes, 95 per cent. These decreases were offset in part by increases in the consumption of pork, fish products, raw and skim milk, oleomargarine, and bread.

UNITED KINGDOM. Between July, 1914, and October 1, 1917, the general increase in the prices of an extensive group of food articles was 97 per cent. For large towns over 50,000 population the increase was 102 per cent and for smaller places 93 per cent. The general average increase for September 1 had been 106 per cent, the drop to 97 per cent showing the effect of various orders of the new Ministry of Food Control (see FOOD CONTROL). The price of bread was on October 1, 55 per cent higher than in July, 1914, but had been reduced from 77 per cent higher on September 1. The percentage increases on October 1, as compared with July, 1914, for some other articles were as follows: beef of various grades averaged about 110; British mutton 90 and frozen mutton 153; bacon, 110; fish, 156; tea, 84; granulated sugar, 190; milk, 78; butter, 99; cheese, 91; fresh eggs, 160; and potatoes, 40. The increase in the cost of living for the items entering into the budget of the working class family, including food, rent, clothing, fuel, and light, was about 80 per cent.

FRANCE. The index number showing the level of retail food prices in French towns with over 10,000 population, excepting Paris, was 55 per cent higher in the first quarter of 1917 than in the third quarter of 1914. For Paris the advance was 47 per cent.

HOLLAND. The increase in the cost of living for rural working class families between 1914 and 1917 was, according to the director-general of labor, about 110 per cent. The items included were food, clothing, rent, and various miscellaneous articles, such as soap, salt, tobacco, matches, starch, petroleum, and candles.

AUSTRALIA. The index number representing the average retail price of food in thirty principal towns of the commonwealth showed an increase of only 26.5 per cent in May, 1917, as compared with July, 1914.

VIENNA. The British *Labor Gazette*, computing from official sources, showed that the general level of food prices was about 212 per cent higher in June, 1917, than in July, 1914. The greatest increases were in the following articles: lard, 636 per cent; bacon, 500; margarine, 500; butter, 469; eggs, 328; beef, 282; pork, 232; potatoes showed no advance; sugar had advanced only 37 per cent; rye bread, 69 per cent; and milk, 80 per cent.

JAPAN. A report of the Bank of Japan indicated that the advance of the general level of commodity prices in July, 1917, was 41 per cent over the level of one year earlier and 66 per cent over July, 1914. Included were 56 commodities, of which 41 had advanced, 4 had fallen, and 11 had remained unchanged. Meanwhile wages had advanced very slightly; in many cases there had been no advance, while the greatest advance reported was for forging factory hands from 60 cents per day in 1913 to 80 cents in 1917. For unskilled labor the advance was from 31 cents (Yo. 62) to 43 cents (Yo. 85) in these four years.

PRICE REGULATION. The remarkable advances in prices above indicated brought into existence throughout western nations an irresistible demand for government regulation of prices. Such regulation began in the Central Powers early in 1915 when maximum prices were established for various fundamental articles. In many cases local communities adopted a similar policy. By the close of 1917 price regulation of fundamental goods, metals, and fuels had become a characteristic governmental activity. As applied to food products the main features of this regulation are indicated under FOOD CONTROL. Such regulation, however, did not stop with wheat, bread, sugar, and other essential foods, but in the Central Powers was extended to the greatest variety of commodities, especially raw materials. In 1917 the coal shortage in every nation at war had become so great that price fixing and rationing were characteristic. In France the issuance of coal cards was begun in the fall, the allotment for each family up to four persons being 264 pounds a month. In Italy the control of coal distribution including prices was taken over by the government. Even in England from which great quantities of coal were being supplied to France and Italy the Government fixed prices and set up a system of rationing for private consumers. This ration allowed 200-weight per month for a four-room house during each of the six winter months with larger allowances up to 2700 weight for nine and ten rooms.

The act of August 10 entitled "An Act to

Provide Further for the National Security of Defense by Encouraging the Production, Conserving the Supply, and Controlling the Distribution of Food Products and Fuel" under which the Food Administration was created also conferred upon the president extensive powers of price regulation. Under this authority the price of copper was fixed at twenty-three cents a pound. A committee under the chairmanship of President Harry A. Garfield of Williams College was given extensive powers over the entire industry of coal and coke production and distribution, including the fixing of prices for various grades and considerable responsibility in the adjustment of wages.

Mr. Hoover in outlining the basic principles of the price regulation policy stated that commodities could be divided for this purpose into four classes: first, such articles as potatoes, onions, and apples, of which there is little importation or exportation, and for which consequently the price is best fixed by home competition; second, such articles as wheat and flour, for which the export demand dominates the price; commodities for which the internal demand exceeds the supply, and where there is also some export business, as in the case of coal; and finally, commodities such as coffee, where our imports control the price. Only articles of the second and third group were believed to require price regulation by the government. In December the Federal Trade Commission came out strongly in favor of an extension of the price regulating policy to many other articles, especially iron, steel, and metals.

PRINCE EDWARD ISLAND. One of the maritime provinces, and the smallest province of Canada. The island is separated by Northumberland Strait from New Brunswick, on the west, and Nova Scotia, on the south. The area is 2184 square miles, which is about twice the land area of Rhode Island. The population decreased from 109,078 in 1891 to 103,259 in 1901 and to 93,728 in 1911. Charlottetown, the capital and largest town, had 11,198 inhabitants in 1911.

The provincial government is administered by a lieutenant-governor, appointed for five years by the governor-general of Canada; he acts through an executive council, or responsible ministry. The legislative power is exercised by a unicameral assembly of thirty members, elected for four years. In the House of Commons of the 13th Canadian Parliament, elected December 17, 1917, Prince Edward Island is represented by three members. The lieutenant-governor in 1917 was Augustine Colin Macdonald, appointed June 2, 1915, in succession to Benjamin Rogers. Premier, John A. Mathieson.

PRINCETON UNIVERSITY. A non-sectarian educational institution for the education of men, at Princeton, N. J. In the fall of 1917 there were 972 students, and 189 members of the faculty. The enrollment was classified as follows: Graduate school, 74; undergraduates-seniors, 94; juniors, 161; sophomores, 252; freshmen, 347. Volumes in the library number 397,126. Productive funds in 1917 amounted to $6,242,060 and the income to $296,031. Princeton University was founded in 1746. President, John Grier Hibben, LL.D., Litt.D.

PROHIBITION. See LIQUORS; LIQUOR REGULATION.

PROSTITUTION. The crusade against prostitution and the attendant venereal diseases was never more effective or widespread than in 1917. Among all European belligerents experience had shown that indiscriminate sex relations were more dangerous to the health and vigor of troops than enemy bullets. Strenuous efforts were therefore made to keep areas filled with soldiers free of prostitutes, and otherwise to reduce the morbidity due to venereal infections. Upon entrance of the United States into the war similar steps were taken. At the same time the repressive measures that have been adopted in one American city after another were extended; new investigations were carried out; and the numerous social hygiene organizations continued their programmes of education and publicity.

INVESTIGATIONS. Among the numerous surveys of the year was that at Columbus, Ohio, made by the New York Bureau of Municipal Research by request of the Columbus Civic League. While not bearing directly on prostitution the report condemned the policy of maintaining a segregated district, and the lack of any system of registration or medical examination of prostitutes. It found that the number of women soliciting on the streets was very excessive in view of the city's size; that the State abatement and injunction law was not enforced. It recommended the adoption and enforcement of a policy of suppression; the use of plain clothes policemen against street solicitors; and extension of supervision of commercial amusements.

The Chicago dance halls were investigated by the Juvenile Protective Association of that city in 1910-11 and again in 1916-17. Little change was found in this period: about half of the 213 studied last were badly ventilated; more than half permitted immoral dancing; two-thirds sold liquor; nine-tenths had no sanitary provision for drinking water. The association with the Committee of Fifteen of Chicago and other societies sought a legislative prohibition of the sale of liquor in any place of amusement or recreation as one of the most effective ways of reducing sex vice and the recruiting of prostitutes

WAR DEPARTMENT. Investigations of conditions among American troops on the Mexican border as well as European experience had shown the necessity of protecting soldiers in training from sex diseases. Consequently Secretary of War Baker in April, 1917, appointed a Commission on Training Camp Activities with Raymond B. Fosdick of New York chairman and including prominent physicians and social workers. This commission had the twofold function of supplying normal recreations of every sort and of keeping camps clean and wholesome. The first function was carried out largely through the Y. M. C. A., the Knights of Columbus, the American Library Association, and specialists in athletic sports, dramatics, and music. In the second the coöperation of such organizations as the Committee of Fourteen of New York, the Watch and Ward Society of New England, the Committee of Fifteen of Chicago, the Bureau of Social Hygiene of New York, and the American Social Hygiene Association was sought. Local police and sheriffs also aided. On the other hand the Y. W. C. A. and a Committee of Protective Work formed by the Commission with Maude E. Miner of New York as chairman sought to safeguard girls near training camps. The control of alcohol being also necessary all saloons and houses of prostitution within five miles of camps were ordered closed by Secretary Baker in a letter to city mayors on August 14. The red light districts were closed in Deming, N. M.; El Paso, Waco, San Antonio, Fort Worth, and Houston, Tex.; Hattiesburg, Miss.; Norfolk and Petersburg, Va.; Jacksonville, Fla.; Alexandria, La.; Macon, Augusta, and Savannah, Ga.; Charleston, Columbia, Greenville, and Spartanburg, S. C.; Douglas Ariz.; Louisville, Ky.; and Montgomery, Ala. Many other cities, including San Francisco and St. Louis, took measures to suppress open houses of prostititution; some passed special ordinances of suppression. A number of States took official action to aid in vice restriction. The Army Medical Department organized divisions of Sanitation, Training Camps, and Infectious Diseases, and similar coöperative activities were begun by the United States Public Health Service. The Council of National Defense through its Committee for Civilian Cooperation in Combating Venereal Diseases secured the aid of State Councils of Defense and of numerous societies and the officials of cities within fifty miles of the thirty-two cantonments. In September the Commission on Training Camp Activities extended its work to American troops in France. It secured policing rights from the French government and sought to safeguard troops when on leave even outside army-controlled areas.

Navy Department. Similar activities to the foregoing were inaugurated by Secretary Daniels in July. He also appointed a Commission on Training Camp Activities for the navy, and of this also Mr. Fosdick was chairman. The secretary pointed out that 114,000 young men were then in training and that experience had amply demonstrated the necessity of protecting them from sex vice.

California. A State-wide drive against prostitution was stimulated by the policies of the War Department. Governor Stevens appointed a commission to carry out approved policies. The State Board of Health sought the aid of city, town, and county officials in a programme including the suppression of commercialized vice, instruction of young men and women regarding venereal diseases, provision of adequate public facilities for diagnosis of infections including free laboratory tests, and securing the reporting of venereal infections and the cure of infected persons. In January San Francisco was thoroughly aroused on the question of tolerated bawdy houses by the public utterances of Rev. Paul Smith, who with others had made a private investigation, supplementing one by the Law Enforcement League in 1916. Much newspaper publicity was given; mass meetings were held, at one of which 7000 persons were present and 20,000 turned away. Dr. Smith held a conference with 300 prostitutes in his church at their request; they made a plea for toleration, alleging that they were forced into vice by poverty. However, they laughed derisively at his suggestion of honest work at $8 to $10 per week as inadequate wages. This lost them public sympathy. The mayor appointed a vice commission; the police closed 200 houses, but the women were only scattered, as it was expected that with changed public attention new districts could be established.

Social Hygiene. The very extensive activities of the numerous societies for the education of the public as to the evils of prostitution and venereal diseases have within the past few years reached nearly every nook and corner of this country. The most important organization is the American Social Hygiene Association and its numerous affiliated State societies. It publishes quarterly *Social Hygiene* and issues monthly a *Bulletin* giving information of activities throughout the world. The Oregon, Massachusetts, Illinois, Maryland, Missouri, and other State social hygiene associations have promoted the enactment of injunction and abatement laws restricting quack advertisements and practitioners, and laws securing the reporting, diagnosis, and treatment of infections. They have been most valuable, however, as centres of continuous educational campaigns by means of lectures, pamphlets, newspaper, and magazine articles.

Much attention was given to the subject of social hygiene in war time by various social organizations, including the National Conference of Social Work at its annual meeting (see Charities), the American Medical Association, the Association of American Colleges, the General Federation of Women's Clubs, and the American Association for the Control of Syphilis. City health departments were never more active than in 1917, showing the increased consciousness of the public of the dangers of sex infections.

Abroad. Great Britain took many steps toward the control of prostitution and venereal disease. The entire subject was extensively investigated by the Royal Commission on Venereal Disease, which reported in 1915. Thereafter the British National Council for Combating Venereal Diseases was brought into existence and the British Local Government Board issued regulations requiring County Councils to establish facilities for diagnosis and treatment and authorizing educational campaigns for which the board would bear 75 per cent of expenses. In March, 1917, the board reported to Parliament that 140 hospitals in England and Wales had agreed to aid local authorities; that 86 of 145 Councils covering 23,500,000 people had formulated programmes for free treatment of venereal diseases, mostly at hospitals, and for the assistance of medical practitioners in diagnosis and laboratory analysis. Similar policies were carried out by the Local Government Board for Scotland and Ireland.

The conditions in the larger cities, especially London, due to the presence of great numbers of soldiers on leave and Colonial troops in transit to France, were extremely difficult to control. Recreation and lodging centres were provided for soldiers and other efforts were made to provide for their recreation and entertainment, especially at London. At a meeting in London June 27 on "The Moral Conditions of the Streets of London," presided over by the Lord Bishop of that city, and in statements by police and military authorities it seemed agreed that while conditions were sufficiently alarming they were no worse than in pre-war times. While the restriction of treating and other control of public houses had actually reduced street drunkenness, the number of prostitutes, especially of women, from various Continental centres, was greatly increased. The Chief Commissioner of Police, Sir Edward Henry, reported in June that 13,000 girls had been taken up from London streets, but that not much effect was observable.

Italian army officials carried out a rigorous programme of prophylaxis. Clandestine prostitution was opposed by severe measures. All women, whether married or not, who by soldiers' testimony were sources of contagion were arrested and segregated during treatment. In two months 232 out of 277 women arrested were found liable to transmit infection. Brothels installed near the front were inspected four times weekly, once by an army medical officer. The houses were well fitted out and supplied with "preventives." No men but soldiers were admitted to these army houses. Soldiers were given frequent sanitary examinations, especially those returning from furlough. Cabinets for disinfection post coitum were installed under the direction of a physician. At the same time educational measures as to the dangers of infection and methods of avoidance were carried out with system. These various plans were believed by army medical experts to be effective in reducing venereal morbidity.

Numerous reports indicated an increase in venereal diseases in the French army and civilian population. These infections had spread, according to reports, to elements presumably safeguarded, including wives of men at the front, indicating that clandestine prostitution was largely responsible. The army officials took added measures of protection by creating special organizations for diagnosis and treatment. These consisted of centres with departments of (1) urology and (2) dermatology and syphilology for each army region. Every effort was made to secure an early and thorough diagnosis of every suspicious case of infection, and intensive treatment of all cases. Lectures as to the nature and dangers of venereal diseases were periodically given and pamphlets distributed. Coöperation of these army authorities with civil authorities was effected to control disease in both sexes. There was considerable agitation in favor of quarantining infected women.

The Prussian Medical Commission formulated an elaborate programme for controlling sex diseases. These included: improvement of the economic status of the population so as to permit earlier marriages; improved housing; instruction on sexual life and the dangers of infection; increased attention to sports, games, and athletics for youth; instruction as to evils of abuse of alcohol; improved diagnosis and treatment; campaign against quackery; cheaper supply of effective specifics; increased supervision of prostitutes by the medical profession; and the segregation of prostitutes from streets and public places for both moral and police reasons.

REFERENCES. A. Maude Royden, *Downward Paths: An Inquiry Into the Causes Which Contribute to the Making of the Prostitute* (1916); James Marchant, *The Master Problem;* Grete Meisel-Hess, *The Sexual Crisis: A Critique of Our Sex Life;* William J. Robinson, *Woman: Her Sex and Love Life;* Australian White Cross League of Sydney, Australia, *The Military Problem of Venereal Disease, Keep Yourself Fit,* and a score of other pamphlets by different authors; Frederic H. Gerrish, *Sex Hygiene; a Talk to College Boys;* Committee of Fifteen of Chicago, *Report for 1916-17;* William Healy, *Mental Conflicts and Misconduct;* M. F., *Prostitution, The Moral Bearings of the Problem* (London); Conservation Commission of Canada, *The Presence of Venereal Diseases in Canada;* Alberto J. Pani, *Hygiene in Mexico;* The Oregon Social Hygiene Society has issued an important series of pamphlets, and the pamphlet publications of the American Social Hygiene Association exceeds 100, of which about a score were issued in 1917.

PROTESTANT EPISCOPAL CHURCH. The total number of communicants in this denomination in 1917 was 1,071,000, an increase of 14,831 over 1916. In the Sunday schools in the United States were enrolled 54,388 school officers and teachers, and 455,997 Sunday school scholars. The total number of the clergy in the United States was 5622. The church maintained the following educational institutions: Theological Seminaries: Berkeley Divinity School, Middletown, Conn.; Nashotah House, Nashotah, Wis.; Episcopal Theological School, Cambridge, Mass.; Virginia Theological Seminary, Va.; Seabury Divinity School, Faribault, Minn.; Divinity School of the Protestant Episcopal Church, Philadelphia, Pa.; Western Theological Seminary, Chicago, Ill.; Church Divinity School of the Pacific, Cal.; Bishop Payne Divinity School (Negroes), Petersburg, Va.; General Theological Seminary, New York City; Divinity Department, University of the South, Sewanee, Tenn.; Bexley Hall, Kenyon College, Gambier, Ohio; Kansas Theological School, Topeka, Kans.; DeLancey Divinity School, Geneva, N. Y. Colleges and Universities: University of the South, Sewanee, Tenn.; Kenyon College, Gambier, Ohio, St. Stephen's College, Annandale, N. Y. The following are non-sectarian, but have a churchly character: Columbia University, Hobart College, Geneva, N. Y.; Trinity College, Hartford, Conn.; Lehigh University, So. Bethlebem, Pa.

Chief among the organizations of men is the Brotherhood of St. Andrew, with its 1143 chapters and about 12,000 members. The organizations among the boys are the Knights of St. Paul, with 160 chapters in various dioceses, and the Knights of St. John. Among the special organizations for mission work are the Church Mission to Deaf Mutes; Society for the Promotion for Church Work Among the Deaf Mutes; the Mid-Western Deaf Mute Mission; Conference of Church Workers Among the Deaf; the Seabury Society of New York. Among the national organizations for women and girls are the Girls' Friendly Society in America; The Order of the Daughters of the King; Organizations for the Increase, Aid, and Better Sustenance of the Ministry; Society for the Increase of the Ministry; Clergymen's Mutual Insurance League; the Clergymen's Retiring Fund; and the Church Pension Fund. Organizations for educational purposes, church defense, and propagation—The Protestant Episcopal Society for Promotion of Evangelical Knowledge; the Clerical Union for the Maintenance and Defense of Catholic Principles; The American Church Union; Albany Cathedral Summer School; Society for the Home Study of Holy Scripture and Church History; Cambridge Conference; The Church Periodical Club; New York Bible and Common Prayer Book Society; The Church Historical Society; The Church Missions Publishing Co.; American Society of Church Literature; and the Joint Diocesan Lesson Board. Organizations for social amelioration and advance—The Church Association for the Advancement of the Interests of Labor; The Church Socialist League; the Church Temperance Society; The Church Mission of Help; and the Society for Social Advance. There are many other similar organizations established for promoting church unity, various guilds for devotional purposes, and religious orders both for men and women. In addition to all these general organizations of the church there is a large number of diocesan and parochial societies that are very active in all the various departments of church activity—social, moral, intellectual. The philanthropic work of the church is represented by 79 hospitals, 44 orphan asylums, 77 homes, and 83 other institutions.

In addition to the foregoing home work, the church is carrying on similar work—evangelical, educational, and medical—in Africa (Liberia), China, Japan, Brazil, Cuba, Mexico, Haiti, and Santo Domingo. The missions in Honolulu, Porto Rico, and the Philippine Islands and Canal Zone are classed with domestic missions and are not included in this foreign work. In this distant field are ten separate and distinct jurisdictions under the leadership of eight bishops, assisted by 325 clerical and lay American workers, and 1187 clerical and lay native workers. There are 489 stations where regular services are established; 230 day and 42 boarding schools with about 13,000 children under religious and moral training. In addition are 364 Sunday schools having an attendance of 21,639 pupils. There are also seven hospitals and ten dispensaries ministering daily to the sick and afflicted, numbering about 200,000 per annum.

The Protestant Episcopal Church in the United States of America now numbers over one million communicants, with probably an additional three millions of baptized members and adherents, employs the use of endowments aggregating $55,000,000, and material structures and equipment of very great value, controlling numerous educational and charitable institutions, with an average income of more than $20,000,000 to expend each year for the furtherance of the building up of the Kingdom of God upon the earth.

PRUSSIA. A European kingdom, the dominant state of the German Empire. The capital is Berlin. The table below shows by provinces the area and the population according to the census of December 1, 1910, as compared with that of December 1, 1890:

		Population	
	Sq. miles	*1890*	*1910*
East Prussia	14,286.5	1,958,663	2,064,175
West Prussia	9,866.7	1,433,681	1,703,474
Berlin (city)	24.5	1,578,794	2,071,257
Brandenburg	15,383.1	2,541,788	4,092,616
Pomerania	11,636.7	1,520,889	1,716,921
Posen	11,193.6	1,751,642	2,099,831
Silesia	15,573.4	4,224,458	5,225,962
Saxony	9,755.7	2,580,010	3,089,275
Schleswig-Holstein .	7,343.2	1,219,523	1,621,004
Hanover	14,868.5	2,278,361	2,942,436
Westphalia	7,806.8	2,428,661	4,125,096
Hesse-Nassau	6,062.5	1,664,426	2,221,021
Rhine Province	10,424.8	4,710,391	7,121,140
Hohenzollern (ter.).	441.0	66,085	71,011
Total..........	134,663.9	29,957,367	40,165,219

Prussia covers about 64.5 per cent of the area of the German Empire and had in 1910 about 61.9 per cent of the population. Its area is nearly equal to the combined area of Ohio, Indiana, and Michigan. The 1910 population of these three states was 10,278,170, as compared with Prussia's 40,165,219. In 1816 Prussia had 13,709,000 inhabitants; in 1864, 23,582,000; in 1871, 24,689,252; in 1880, 27,279,111; in 1900, 34,472,509. The average annual increase from 1816 to 1910 was 1.14 per cent; from 1900 to 1910, 1.53 per cent. In 1910, communes having 2000 inhabitants or more aggregated a population of 24,687,490; communes with 2000 to 5000, 4,086,006; communes with 5000 to 20,000, 5,682,779; communes with 20,000 to 100,000, 5,900,672; communes with upwards of 100,000, 9,018,033. Of the inhabitants in 1910, Evangelicals composed 61.82 per cent; Roman Catholics, 36.31 per cent; other Christians, 0.47 per cent; Jews, 1.04 per cent.

Prussia has a bicameral parliament. The lower house (443 members) is elected by indirect vote. The ministry is appointed by and responsible to the king. The King of Prussia is German Emperor (q.v.).

PSYCHICAL RESEARCH. For some reason (the war is doubtless partially responsible) there is a decided increase in the number of books devoted to "psychical" phenomena. The most important are: E. Boirac, *Our Hidden Forces*, tr. by W. de Kerlor, which received a prize from the Académie des Sciences for "the best book on hypnotism, suggestion, and the physiological forces which one human organism may exert upon another at a distance"; P. Joire, *Psychical and Supernormal Phenomena*, tr. by D. Wright, which consists of a general, and often uncritical, discussion of the various types of "psychical" phenomena; Sir W. F. Barrett, *On the Threshold of the Unseen*, practically a new and much enlarged edition of his earlier work (1908), and J. A. Hill, *Psychical Investigations*, which reports sittings with mediums and discusses methods and results of investigation.

R. J. Thompson's *Proofs of Life After Death* has reached a fifth, and H. Frank's *Psychic Phenomena*, a second edition. Other books are: B. Fuller, *Man as He Is;* C. B. Newland, *What is Instinct?* E. C. Randall, *The Dead Have Never Died;* W. E. Forbes, *Cycles of Personal Belief;* J. H. McKensie, *Spirit Intercourse;* E. B. Warman, *Psychic Science made Plain;* and J. H. Skrine, *Survival of Jesus*. Patience Worth (see YEAR BOOK, 1916) has communicated *The Sorry Tale*, a story of Rome and Palestine in the time of Tiberius.

In his presidential address (*Proc. S. P. R.* xxix, 46), Gilbert Murray explains telepathic experiments of his own on the basis of reactions to meanings of which he was not aware. Mrs. A. W. Verrall, however, who analyzes 100 of Murray's cases (*Ib.*, 64), thinks there is some evidence for "telepathy in the sense of a transference of thought, as distinct from spoken words, from one person to another." Sir O. Lodge (*Ib.*, 111) presents evidence of a warning of impending trouble received before, and of information concerning unknown photographs received after Raymond's death (see YEAR BOOK, 1916). J. G. Piddington (*Ib.*, 1) cites simple instances of "cross correspondences," and G. W. Balfour (*Ib.*, 147), further scripts affording evidences of personal survival. J. H. Hyslop (*Proc. A. S. P. R.*, xi) brings to an end the data and discussion of the Doris Fischer case of multiple personality. He concludes, largely from "cross correspondences," that at least one, and perhaps others, of the personalities were "obsessions" of the "instigative" type; the personality is due to a spirit acting as stimulus to the unconscious without transmitting its own identity. P. F. Swindle (*Amer. J. Ps.*, xxviii, 349) states the conditions under which visual, cutaneous, and kinæsthetic after-images of long duration may appear as ghosts.

PSYCHOLOGY. The review of the year in psychology must of necessity be restricted mainly to the United States. Practically no psychological literature has been received from Germany and Austria, and the output of France, England, and Italy has been curtailed. In America, on the other hand, not only have all established journals been issued regularly, but two new ones, *Psychobiology*, a bi-monthly devoted to the field common to psychology and to the biological sciences, and the *Journal of Applied Psychology*, a quarterly published in the interest of psychotechnology, have also appeared. We have, farther, a volume entitled *Studies in Psychology*, consisting of eighteen papers by colleagues and former students of E. B. Titchener; while a similar volume, *Philosophical Essays*, by former students of J. E. Creighton, contains some articles of psychological import.

Psychology and the War. Aside from the decreasing effect of the war on scientific research in Europe, G. S. Hall (3, 1)* has pointed out that the present tendency of research in America is from pure to applied science, and that American psychology will be expected to make a direct contribution to the emergency of the war. The nature of this contribution was the subject-matter of President Yerkes' address at the 26th annual meeting of the American Psychological Association, held in Pittsburg, December 27-29. A committee on psychology was early organized by the National Research Council, and twelve committees were later appointed by the A. P. A. for research in the mental examination of recruits and officers, the selection of men for tasks requiring special skill, and the incapacity and emotional instability of men in service, and for work upon special problems in aviation, audition, and vision, in recreation and motivation, and in pedagogical and psychological aspects of military training and discipline. At the close of the year these committees were at work either in laboratories or in the field. The mental examinations of recruits were first undertaken in four cantonments, and later extended to all cantonments under the direction of psychologists regularly commissioned as officers in the Sanitary Corps.

Applied Psychology. The trend of psychological publications during the year has been toward application. The concept of applied psychology, however, is by no means clear; the single text-book (H. L. Hollingworth and A. T. Poffenberger, *Applied Psychology*) defines it as the "applications of the findings of psychology to the affairs of everyday life." L. R. Geissler, in *What is Applied Psychology?* (3, 49), states that its point of view is the "investigation of concrete situations for the sake of utility." Münsterberg and Titchener have earlier shown that a more adequate term for such activities would be Psychotechnics or Psychotechnology. The emergence of applied psychology can be traced to the proved practical utility, after two decades of experimentation, of mental tests: tests for general intelligence, for educational accomplishment, and for vocational selection and guidance. As regards measures of intelligence, there are at present two types of tests. The one is represented by the Binet scale, which has passed through revisions by Binet himself, H. H. Goddard, and F. Kuhlman, and which has reached its highest stage of development in the "Stanford Revision" by L. M. Terman (*The Measurement of Intelligence*, 1916). The other, a point scale, was originated by R. M. Yerkes, J. W. Bridges, and R. S. Hardwick (*A Point Scale for Measuring Mental Ability*, 1915). The differences between these two types, as described by Yerkes (3, 111), are that the Binet is an age-scale, based upon the assumption of appearing functions, whereas the point scale is a functional scale, based upon developing functions. The Binet scale selects tests according to percentage of passes, and groups according to age; it is, therefore, an inflexible scale suitable only for the race, social status, or sex for which it was constructed. The point scale, on the other hand, selects and arranges tests without regard to norms; new norms must be discovered for different races, sexes, ages, and for individuals of different social status. Finally, the Binet scale demands judgment of success or failure, all or none, whereas the point scale requires judgments of more or less. J. W. Bridges and L. E. Coler (16, 1) have found that sociological condition has, in fact, a considerable influence upon the intelligence-ranking of the child by the Binet scale; and, although Terman asserts that there is no break in the distribution of grades of intelligence ranging from idiocy to genius, E. A. Doll (7, 74) insists that the feeble-minded test over a wider range than the normal group, C. C. Brigham (17, No. 102) reports that some tests easy for the normal are difficult for abnormal individuals, and F. Mateer (7, 74) finds differences between normals and defectives revealed by examination-grades and clinical studies which are not shown by intelligence-tests. J. E. W. Wallin (11, 179), however, does not corroborate the view that feeble-minded show greater variation in development than normal children. The point scale, in its turn, has been criticized by F. N. Freeman (16, 484) and A. S. Otis (12, 129). The latter shows that there is no system in the assigning of points to increments of mental ability, and that coefficients of intelligence of the same value do not represent the same degree of intelligence for different ages. The first fault has, however, been corrected by R. S. Hardwick (12, 416), who undertook a more accurate weighting of the tests on the basis of correlation between scores of every test and total scores; while Yerkes and C. S. Rossy have met in part the second point by devising a new scale for adolescent and adult individuals (*Boston Med. Surg. Jour.*, April, 1917). A general criticism of both scales has been offered by W. F. Dearborn (7, 221), and certain mathematical aspects of intelligence-testing have been discussed by A. S. Otis (16, xxiii, 1916, 129, 165) and

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*These numbers refer to publications listed in bibliography.

B. Ruml (18, 633). Annotated bibliographies of the intelligence-scales have been published by S. C. Kohs (12, v, 1914, 215, 279, 335; viii, 1917, 428, 488).

In addition to tests of general intelligence, attempts have been made to formulate others which will either supplement the general tests, or measure special abilities and thereby afford a more reliable diagnosis of mental defectives and deficients. The most important are: J. E. W. Wallin, *Psycho-Motor Norms for Practical Diagnosis* (17, xxii, No. 2), based on the Seguin Form-Board; R. Pintner and D. G. Paterson, *A Scale of Performance Tests*, which aims to avoid language responses; H. C. Stevens, *A Revision of the Rossolimo Tests* (24, 128), which have proved successful in the diagnosis of Dementia Præcox; and J. N. Curtis, *Tactual Discrimination and Susceptibility to the Müller-Lyer Illusion*, a report of tests by the method of single stimulation (24, 308).

In a study of the relation between character and intelligence by the method of correlation, E. Webb (9, iii) discovers evidence in support not only of the common factor of general ability, but also of a second, independent factor, which he calls "persistence." Forecasts of this factor are seen in Müller's "perseveration" as applied to character, in Heymans' and Wiersma's "secondary functions," in Culler's "interference and adaptability," and in Ach's "will."

For educational purposes, intelligence-scales have been amplified by measures of accomplishment in most, if not all, school subjects. The tests have been standardized, and the year has brought a number of books designed for the instruction and guidance of public school teachers. H. O. Rugg has written ***Statistical Methods Applied to Education***, a handbook explaining the principal statistical devices in non-technical language, and W. S. Munroe, J. C. De Voss, and F. J. Kelly have published ***Educational Tests and Measurements***, furnishing tests of ability in the common school subjects, with directions for application, scoring, and evaluation of results. A similar book is J. C. Chapman and G. P. Rush, ***The Scientific Measurement of Classroom Products;*** broader in its scope is F. N. Freeman, ***Experimental Education***. W. H. Pyle offers a ***Manual for the Mental and Physical Examination of School Children***, and N. J. Melville a ***Standard Method of Testing Juvenile Mentality by the Binet-Simon Scale.***

The mental testing of college students presents some special problems, the nature of which has been discussed by W. V. Bingham (3, 38) and H. D. Kitson (23, vi, 412), D. Sunne (12, 193) finds that the scores of students in tests vary widely from class standing; he suggests an index of vocational capacity based upon physical examination, college grades and activities, and tests of intelligence. M. F. Washburn (*Vassar Quarterly*, 1916, ii, 15) and S. D. White, S. May, and M. F. Washburn (2, 151) report studies of college freshmen; M. E. Haggerty and J. M. Thomas have tested in particular the reading attainments of college freshmen (23, vi, 230). The most extended study of the college student, however, is that of H. D. Kitson (17, No. 98) who since 1914 has successfully employed mental tests for the classification of students, for checking their scholastic work, and for vocational guidance, in a college of the University of Chicago.

Tests for vocational selection, vocational guidance, salesmanship, and business efficiency are in the early stages of development. The most recent book (H. L. Hollingworth, ***Vocational Psychology***, 1916) does little more than trace their history and indicate the general phases of the problem. Vocational selection, characterized by W. D. Scott (3, 61) as the "selection for a particular position of that one of the applicants who is most likely to succeed in it," lends itself more readily to experimental method than does vocational guidance, the selection of the best vocation for a particular individual. Scott has indicated four means of checking the results of vocational selection; H. E. Burtt (3, 201) has published a number of tests invented by Münsterberg; and H. W. Rogers (3, 268), tests for stenographers. L. M. Terman (3, 17) has shown that, for certain vocations, tests of general intelligence together with some educational tests, are sufficient for the selection of the best applicant. The methods for vocational guidance are for the most part still to come. C. E. Seashore's measurements for musicians (***U. of Iowa Monographs***, Series 1, No. 2) point in this direction; and J. K. Folsom (3, 252) has taken a further step by an analysis of the motives which determine the choice of a vocation. J. M. Brewer (23, v, 541) pleads for a broader view of the problem than is customary.

Tests of efficiency usually consist in the measurement of the amount and quality of work accomplished in the unit of time. E. L. Thorndike and P. J. Krause (23, v, 657) find that mental work is not affected by degree of humidity; J. C. Chapman (13, 165) that half-minute alternations of certain kinds of work, such as cancellation and addition, result in a gain of efficiency; J. W. Baird (3, 30), that greater legibility in the printing of a telephone-directory may be gained by inserting leads between the lines of type; E. L. Thorndike (3, 265), that quantity and quality of product may, from extrinsic motives, remain the same while the satisfaction of the worker steadily decreases; A. I. Gates (10, i, No. 5; ii, No. 1), that the curve of daily efficiency rises steadily during the morning hours, falls at noon, and again reaches a maximum in the afternoon; motor efficiency, however, does not fall during the noon hours, and there is a slight loss in mental accuracy in the afternoon. The common notion that the work-decrement is a measure of fatigue has been shown by R. Dodge (16, 89) to be erroneous. Work-decrement may be due to a number of factors. True fatigue is always relative, resulting from the variability of inner and outer stimuli, and from the interaction of competing paths.

D. Sunne (3, 71) corroborates the findings of earlier investigators that, on the basis of Binet tests, negro children are mentally younger than white children, are inferior in kinæsthetic discrimination and motor control, and in capacity for logical analysis, but are more suggestible, and have a more fertile imagination and a greater facility in control of words than white children of approximately the same social status. It has also been found again that women are more suggestible than men (W. Brown, 10, ii, No. 6), and that they slightly excel in memory-tests, particularly in those involving verbal memory, but that they are slightly surpassed by men in reasoning (A. I. Gates, 10, i, No. 6; 16, 139). Deaf children have a smaller memory span with visual learning of digits than normal children (R. Pintner and D. G. Patterson, 13, 76). There are marked individual differences in judgments of the beauty of simple geometrical forms, and there is great diversity among judgments whose average favors the "golden section" (E. L. Thorndike, 16, 147). Eighteen pairs of brothers and sisters show resemblances of mental traits approximately as great as physical traits; it would appear, therefore, that mental make-up is inheritable (D. Starch, 13, 235). Further evidence for the inheritance of mental traits is found in the fact that the relative abilities of a child in the four simple arithmetical processes show high correlation with similar abilities of one parent (M. V. Cobb, 12, 1).

GENERAL PSYCHOLOGY. Notwithstanding the unusual trend toward application, there has been a decided advance at most points of the front of scientific psychology. J. Jastrow (16, 249) in general, and R. Dodge (16, 89) in a particular instance, have warned against the pursuit of application at the expense of theoretical knowledge. The warning is timely; but thus far psychology is holding her own. The books of the year fall into three groups. The first contains H. Maudsley's *Organic to Human: Psychological and Social*, a series of essays in which the author emphasizes the dependence of psychological phenomena upon nervous structure, and J. Loeb's *The Organism as a Whole from the Physico-chemical Viewpoint*, a companion volume to the earlier *Comparative Physiology of the Brain*. The second comprises three books written for popular reading: H. L. Hollingworth and A. T. Poffenberger, *The Sense of Taste*, and H. T. Moore, *The Sense of Pain and Pleasure*, both of which are written from analytic, genetic, and æsthetic points of view, and R. F. Richardson, *Psychology and Pedagogy of Anger*, a study in genetic psychology. The unifying aim of the third group is the explanation of human conduct. The explanation may be in terms of a conflict of dispositions (F. L. Wells, *Mental Adjustments;* W. Healy, *Mental Conflicts and Misconduct*), or by way of Freudian concepts (W. Lay, *Man's Unconscious Conflict*). The English contributions to Freudian psychology have been enlarged by translations of O. Pfister, *The Psychoanalytic Method* (C. R. Payne) and A. Adler, *The Neurotic Constitution* (G. Glueck). In this connection three papers call for notice: C. G. Jung, *La structure de l'inconscient* (5, 152); R. S. Woodworth, *Some Criticisms of the Freudian Psychology* (1, 174); and W. A. White, *The Adlerian Concept of the Neuroses* (1, 168).

On the systematic side, M. W. Calkins further explains the self of her system in *The Case of Self against the Soul* (16, 278), and *Purposing Self vs. Potent Soul*. Here the conscious, purposing self is distinguished from the metaphysical or vitalistic soul. From the point of view of the "act" psychology, R. M. Ogden (19, 290), following Westphal and Stumpf, makes out three stages of consciousness: simple presentation, awareness, and cognition; to which there are related, as principal functions, association, attention, and relation. J. B. Watson (16, 329) and A. P. Weiss (16, 301, 353) distinguish behaviorism from physiology and from psychology as usually understood, but fail to show how it differs from biology. R. M. Yerkes (18, 154) states why he is unable to identify behaviorism with genetic psychology; and S. E. Jelliffe defends the concept of "mental disease," which Watson had assailed as standing for something which behaviorism does not reach and to which speech as motor habit gives expression. B. H. Bode (18, 288) finds the basis of distinction between conscious and reflex behavior in awareness of meaning; and H. Carr (16, 181) thinks that the difficulty in which we are placed by subjectivism and behaviorism is avoided if we define mental process as psychophysical. As regards principles of explanation, E. S. Abbott (18, 41) argues that content (meaning) enters dynamically into the causal series, and that the psychophysical relationship consists therefore of a triple instead of a dual series. H. C. Warren (20, 602), on the other hand, makes out as good a case for a purely physical explanation of all human activity and thinking. W. B. Pillsbury (24, 18) despairs of ultimate agreement upon principles of explanation in the causal sense, and thinks that the present problem is one of correlation. In this connection T. G. Brown's *Speculations on the Working of the Brain* (14, 53), which formulates present-day physiological theories, is of interest. From the behavioristic point of view, S. B. Russell, in *Compound Substitution in Behavior* (16, 62) and *Advance Adaptation in Behavior* (16, 413), offers explanations of reactions to a complex of stimuli, and of purpose. W. S. Hunter (16, 74), reporting experiments on "delayed reactions" in an infant, concludes similarly that they are due to some non-observable but probably intra-organic (kinæsthetic) factor. In the interest of genetic psychology H. W. Chase (2, 175) finds the conditioned reflex to be a type of process which, providing widespread bodily resonances are involved, might well be inherited.

In experimental psychology the most notable book of the year is H. J. Watt's *The Psychology of Sound*, which is based on the author's well known theories of the uniformity of sensory attributes and of their integration in perception. The volume is a companion to Parsons' book on Color (see YEAR BOOK, 1915) and to H. Henning's work on smell, the last installment of which has now appeared (26, 1: see YEAR BOOK, 1916). In the sphere of vision, L. T. Troland (13, 1) has brought together a number of investigations in illuminating engineering which are of interest to psychologists. The problem has been to measure the intensity of the visual stimulus. Two methods have been proposed; the one, radiometric, advocated by C. E. Ferree and G. Rand (18, 457), seeks to measure the physical stimulus; the other, photometric, preferred by most investigators, measures the physiological stimulus. For the latter purpose the flicker-method seems to be the most adequate. Troland (2,497) has also published the results of experiments on *The Influence of Changes of Illumination on After-Images*, which promise to be of theoretical importance. H. D. Cook and F. M. Kunkel (17, No. 96) have questioned Kirschmann's law that simultaneous color contrast is best when brightness contrast is eliminated. R. L. Crane (2597) finds, however, that the law holds if the saturation of the induced color is taken, in Hering's sense, as the ratio of color valence to white valence. Finally, S. Dawson (8, 510) has made a first attempt to determine the laws of binocular color mixture. Hering's results are confirmed, and the relative saturations and brightnesses of the stimuli that allow of mixture are determined.

If we may judge by the number of articles, the dominant interest in experimental psychology lies still in the problem of perception. Studies limited to the conditions of perception are: L. Enjalran, *Autour de l'expérience de Wheatstone* (21, 401), in which the attempt is made to explain results of Wheatstone, Wundt, and Helmholtz in favor of the law of corresponding points, and C. A. Ruckmich, *Visual Rhythm* (24, 231), in which it is found that the conditions (quality, intensity, and duration) under which visual stimuli set up a visual rhythm are similar to those under which auditory stimuli evoke an auditory rhythm. H. E. Burtt, *Auditory Illusions of Movement* (13, 63) and *Tactual Illusions of Movement* (13, 371), finds similarly that the conditions for the auditory and cutaneous perception of movement, where no objective movement takes place, are similar to those for the visual illusion as reported by Wertheimer and Korte. J. Peterson (2, 476) states the conditions for *Some Striking Illusions of Movement of a Single Light on Mountains.* The most thoroughgoing attempt yet made to describe completely a perceptive pattern, as regards constituent processes, the nature of their integration, their temporal course and their relative clearness, is that of A. S. Rogers, *An Analytic Study of Visual Perception* (2, 519). A similar study by S. C. Fisher, *An Analysis of a Phase of the Process of Classifying* (2, 57), shows that the important feature of the perception was the character of the course of attention.

The context-theory of meaning in perception, which had been attacked by T. V. Moore (see YEAR BOOK, 1915), with results that seemed to tell against it, has been the subject of investigation in several quarters. E. C. Tolman (16, 114) repeated Moore's experiment, and could only partially confirm earlier findings. Moore (16, 318), nevertheless, accepts the outcome as a "confirmation of the fact that meaning and imagery are not identical." R. M. Ogden (24, 78), so far substantiated Moore that he found meanings without imaginal contexts. H. P. Weld (24, 181), believing that the theory required relatively unfamiliar instead of the highly familiar stimuli thus far employed, not only found imaginal contexts but was able, in a fashion, to trace their decay as was to be expected under the theory. He also discovered that the attitudes set up by the instructions to react to meaning and to process are not the same, and that the reaction-method is therefore inadequate to the problem as Moore conceived it. E. G. Boring and A. Luce (2, 443) do not agree with Carlson that appetite is conditioned upon a particular quality of sensation; appetite is rather a gross attitudinal meaning which may be carried by a number of processes.

The ability to judge the time upon awakening from sleep has been made an object of investigation by R. Weber (5, 180) and by L. D. Boring and E. G. Boring (24, 255). The former was able to estimate with an error of 5 minutes in 1-7 of 886 cases, but found no clues; the latter, with four observers, were correct within one-half the accuracy of chance, and important criteria were found in the general bodily state. E. L. Thorndike, from the results of two experimental studies (16, 220; 12, 323), concludes that incorrect reading is due to wrong connections, to over- and underpotency of words, and to failure to test the meanings that arise.

R. Baerwald, *Zur Psychologie der Vorstellungstypen* (1916), discusses principally motor and musical imagery; American and English investigations of ideational types are for the most part ignored. E. L. Thorndike finds that the ability to visualize is no help in the estimation of relative distance and in simple mental multiplication. K. M. Dallenbach, on the other hand, reports a wealth of visual, verbal-motor, verbal-auditory, and kinæsthetic imagery in playing blindfold chess. The partial inhibition by visual perception of the ideas involved in reproducing simple forms, visually presented, has been demonstrated by G. R. Wells (16, 322).

E. A. McC. Gamble and L. Wilson (17, No. 96) have studied the importance of spatial localization in learning and recall; a paper on the subject by W. Jacobs came from G. E. Müller's laboratory in 1907. The results show that, as Jacobs also concluded, the presentation of the material in such fashion as to foster the formation of place associations does in fact facilitate recall. From another study by Gamble it appears that the effect of a given rate of repetition is not the same for all observers; slow rates are the more adequate for visualizers, but do not permit of maximal attention on the part of those who employ a more rapid method of learning. H. B. Reed (13, 315) failed experimentally to confirm a view credited to Meumann that there is a general memorial function which may be improved by special training of a single function. A. S. Edwards (24, 209) likewise disputes Meumann's opinion that Jost's law is not operative for small amounts of material. J. Peterson (13, 178), who has repeated Swift's experiments in ball-tossing, questions the familiar "learning curve," which results from plotting errors and successes in absolute instead of in the more accurate relative amounts. W. S. Hunter (16, 188) suggests that statements of the law of association should be broadened to include arousal in sensory as well as in imaginal terms.

J. W. Baird (24, 43), who tested a number of observers with memory for absolute pitch by means of various instruments, concludes that the recognition of tones by their absolute pitch-names is conditioned upon the recognition of some attribute (like Köhler's vocality or Révész's tonality) which is unobserved by most individuals.

E. B. Titchener (16, 43) has done systematic psychology a service by a genetic study of the Wundtian concepts of *Bewusstheit* and *Grad des Bewusstseins.* The former he characterizes as "conscious status," the latter as degree of organization. Two experiments concerning the effect of distraction upon reaction-time give equivocal results: J. E. Evans (4, No. 37) finds that the distractor always increases, whereas J. J. B. Morgan (4, No. 35) reports that, after initial practice, it decreases the reaction-time. Further work is needed. Since its discovery in the Würzburg experiments the attitude, or intent, or "set" of the observer has assumed increasing importance in psychology. Its rôle in mental functioning is the subject of a paper by J. W. Baird (19, 307), its significance in memory is dismissed by L. Leclère (21, 105), and its consequences for the psychophysical judgment by S. S. George (2, 1); and it has finally been made the subject of experimentation in its own right by M. A. May (4, No. 39). The last-named author distinguishes between the "task-notion," the understanding of the meaning of the instruction, and the "task-set," the "process of getting specifically ready to do a specific task or, in Ach's terms, the setting up of determining tendencies."

In feeling, E. B. Titchener has made a critical study of Stumpf's affective psychology (2, 263); and A. Wohlgemuth (8, 423) has inquired into the nature of the feelings and their neural correlates. He concludes that pain is a sensation which may be pleasant, unpleasant, or indifferent; that pleasantness and unpleasantness are frequently localizable; and that pathological evidence goes to show that the "feeling centre" lies in the lateral zone of the optic thalamus. L. R. Geissler, in *The Affective Tone of Color Combinations* (24, 150), finds that the greater the pleasantness of the individual constituents, the greater is the pleasantness of the combination. J. B. Watson and J. J. B. Morgan (2, 163) have undertaken to find the principal situations which arouse fear, anger, and love in new-born infants, and to describe the reactions. They believe that these typical responses may, like other conditioned reflexes, be attached to novel stimuli by "transference." M. G. Blanton, *The Behavior of the Human Infant During the First Thirty Days of Life* (16, 456), reports observations made in a maternity hospital, which are a distinct contribution to child study.

Social Psychology. C. A. Ellwood has written *An Introduction to Social Psychology*, a systematization and simplification of the theories presented in his earlier work, *Sociology in its Psychological Aspects.* J. Dewey (16, 266) and H. W. Chase (2, 216) plead in the interest of social control for a social psychology based on behavior-psychology. M. F. Washburn (24, 11) finds the most striking difference between the social psychology of man and that of the lower animals to be an "ejective consciousness," an awareness of thoughts and feelings as belonging to other minds than our own. R. H. Gault employs a similar, if not the same, principle to explain the "sense of social unity" (24, 121). To the psychology of religion, G. S. Hall contributes *Jesus, the Christ in the Light of Psychology*, from the point of view of Christology and genetic psychology; J. H. Leuba, *The Belief in God and Immortality*, an historical and statistical study; S. Brown, *Sex Worship and Symbolism of Primitive Races;* and G. A. Coe, *The Psychology of Religion.* C. G. Shaw (24, 30) discusses *The Content of Religion and Psychological Analysis;* E. L. Schaub (19, 328) writes a critique of functional interpretations of religion; and J. H. Leuba (2, 578) presents a new view of the place of ecstatic intoxication in religion.

Bibliography. (1) *Jour Abnormal Psychol.*, xii; (2) *Amer. Jour. Psychol.*, xxviii; (3) *Jour. Appl. Psychol.*, i; (4) *Archives of Psychology;* (5) *Arch. de psychol.*, xvi; (6) *Jour. Psycho-Asthenics*, xxii; (7) *Psychol. Bull.*, xiv; (8) *Brit. Jour. Psychol.*, viii.; (9) *Brit. Jour. Psychol. Monog. Suppl.;* (10) *Univ. of Cal. Studies in Psychol.;* (11) *Psychol. Clinic*, xi; (12) *Jour. Ed. Psychol.*, viii; (13) *Jour. Exper. Psychol.*, ii; (14) *Mind, N. S.*, xxvi; (15) *Psychobiol.*, i; (16) *Psychol. Rev.*, xxiv; (17) *Psychol. Rev. Monog. Suppl.;* (18) *Jour. Phil. Psychol. and Sci. M.*, xvi; (19) *Philosophical Essays in Honor of J. E. Creighton;* (20) *Phil. Rev.*, xxvi; (21) *Rev. Philosophique*, lxxxiii, lxxxiv; (22) *Ped. Sem.*, xxiv; (23) *School and Soc.*, v, vi; (24) *Studies in Psychology; Titchener Commemorative Volume;* (25) *Tr. School. Bull.*, xiv; (26) *Zeit. f. Psychol.*, lxxvi.

PUBLIC SCHOOLS, Cost of. See Education in the United States.

PUGILISM. See Boxing.

PULP. See Forestry.

PUMPS. A notable duty record by a turbine centrifugal pump was made at the John Street Station of the Toronto Ontario Waterworks. Here a 24-in. steam turbine driven centrifugal pumping unit was a duty récord of 137,000,000 ft.-lbs. per 1000 lbs. of steam. This test was made by Professor R. W. Angus of the University of Toronto and dealt with one of two similar units of 24,000,000 gallons capacity, which were installed as part of an equipment of five large centrifugal pumps. The two 24-in. pumps were single stage, double suction type connected in series and were guaranteed to give not less than 24,000,000 gallons per day against a pressure of 107 pounds per square inch, measured between suction and discharge mains, and were to have a duty of 141.5 million foot-pounds per 1000 pounds of steam including that used by jackets and auxiliaries. The performance of these pumps exceeded that of the Montreal turbine unit which hitherto had held a record in this field. An important paper on air-lift pumps was presented before the British Institution of Mechanical Engineers, November 16, 1917, and a discussion of a series of tests made by the author, A. W. Purchas was given. This paper discussed the low efficiency of most insulations and showed how this could be increased by the proper consideration of the theory and the improvement of the equipment and operation. A full resumé was printed in *Engineering* (London) for November 23, 1917.

PURDUE UNIVERSITY. A co-educational State institution at Lafayette, Ind. In the fall of 1917 there were 1620 students and 183 members of the faculty. Volumes in the library numbered 50,000. T. G. Alford, professor of mathematics, and M. J. Goldin, professor of practical mechanics, retired in 1917. The university received a gift of 385 acres of land to establish a forestry reserve in Randolph County to be known as the Herbert Davis Forest Reserve. Productive funds in 1917 amounted to $445,000 and the income therefrom to about $22,000. The income of the university is derived chiefly from Federal and State appropriations. The university was founded in 1869. President, Winthrop Ellsworth Stone, LL.D.

QUAKERS. See Friends.

QUEBEC. The largest province of Canada. It extends from Ontario, the United States, and New Brunswick northward to Hudson Strait and includes most of the Labrador peninsula. The city of Quebec is the capital. The estimated area is 706,834 square miles, of which

15,969 water; the gross area amounts to about 23 per cent of the gross area of the United States. The population at the 1911 census was 2,003,232, the increase over 1901 being 21.49 per cent. The estimated population of Montreal, the largest city of Canada, was 650,000 in 1915, as compared with 470,480 in 1911 (it is not unlikely that the 1915 estimate is too large); Quebec, 100,000 (78,710); Maisonneuve, 34,856 (18,684; Verdun, 25,000 (11,629); Hull, 20,257 (18,222).

The provincial government is administered by a lieutenant-governor, appointed for five years by the governor-general of Canada; he acts through an executive council, or responsible ministry. The legislative power is exercised by the Legislative Council (24 members, appointed for life) and the Legislative Assembly (81 members, elected for five years). Quebec has a constant representation of 65 members in the Canadian House of Commons; the representation of the other provinces is proportionate to this number, on the basis of population as ascertained at the regular decennial census. The lieutenant-governor in 1915 was Sir Pierre Evariste Leblanc, K.C.M.G., appointed February 9, 1915, to succeed Sir François Langelier. Premier, Sir Lomer Gouin, K.C.M.G. See CANADA; also BRIDGES.

QUEENSLAND. The northeastern State of the Commonwealth of Australia. It lies north of New South Wales and South Australia and east of South Australia and the Northern Territory. Queensland is the second largest of the Australian States, having an estimated area of 670,500 square miles, which is about 22.5 per cent of the area of the Commonwealth or about four and one-quarter times as large as California. Capital, Brisbane. Estimated population June 30, 1916, 687,471, as compared with 689,678 in 1915 and 605,813 at the 1911 census (these figures being exclusive of full-blooded aboriginals). In 1915 the estimated population of Brisbane and suburbs, within a ten-mile radius, was about 161,900.

The legislative power is vested in a parliament of two houses, the Legislative Council and the Legislative Assembly. The Council consists of 38 members (but the number is not limited) appointed by the Crown for life; the Assembly consists of 72 members elected for three years by universal suffrage. The executive authority rests with a governor, who is appointed by the Crown and acts through a responsible ministry. The governor in 1917 was Maj. Sir Hamilton John Goold-Adams, G.C.M.G., C.B., who assumed office in 1914. Premier and attorney-general, T. J. Ryan. See AUSTRALIA.

QUETZALTEPEQUE VOLCANO. See VOLCANOES.

QUICKSILVER. The demand for quicksilver has been stimulated owing to the large consumption of the metal in the manufacture of war supplies, and the generally prevailing high prices resulting from the great demand. The total output in 1916 was 29,932 flasks of 75 pounds each, compared with 21,033 flasks in 1915. The production in California increased from 14,283 flasks in 1915, valued at $1,174,881, to 21,045 flasks, valued at $1,811,554 in 1916. The exports of quicksilver in 1915 amounted to 3372 flasks, valued at $225,509, compared with 8880 flasks, valued at $670,475 in 1916. The imports amounted to 5659 flasks, valued at $515,919 in 1916.

The domestic output of quicksilver in 1917, according to preliminary estimates made by the United States Geological Survey, amounted to 36,351 flasks of 75 pounds each, valued at about $3,857,000. This is reckoned on the average quoted market price at San Francisco. This was the largest output in quantity since 1883, and the greatest in value since 1875. The States producing are California, Texas, Nevada, Oregon, and Arizona. The output for California in 1917 was 24,251 flasks, compared with 21,045 flasks in 1916. The output of Texas was 10,759 flasks, against 6306 flasks in 1916. The production of Nevada decreased from 2198 flasks in 1916 to 919 flasks in 1917. In Arizona and Oregon combined the production was 422 flasks in 1917, against 383 flasks for these States and Washington combined in 1916.

The average San Francisco market price for the year was $106.12, the lowest average monthly price being $81.00 a flask in January, and the highest $126.25 in February. The high prices were due to greatly increased explosives, anti-fouling paint for ship bottoms, etc., but also to excess of exports over imports. The exports for the first ten months of 1917 were 10,222 flasks, against 8880 flasks for the entire year 1916, and the imports were 4491 flasks for the first nine months of 1917, against 5659 flasks for all of 1916.

RABIES. During the year 1916, 1391 persons received treatment for rabies at the Institut Pasteur at Paris, of which number 6 or 0.43 per cent died of the disease. Two patients were seized during the course of antirabic treatment and one died within two weeks after the end of the treatment. Eliminating these three cases the correct statistics as given by the Institut are: 1388 cases treated; 3 deaths; mortality, 0.21 per cent. The percentage of deaths is slightly higher than before the war, and the number of persons bitten is considerably larger. In years preceding the war, it was usual to have no deaths from hydrophobia in Paris.

The Department of Health, New York City, has been making an elaborate study and classification of patients and of infected dogs. During 1916 the total bites reported were 3247, 403 less than the previous year; dogs biting while leashed, 358; dogs biting while muzzled (some of them ineffectually), 263; dogs biting while leashed and muzzled, 120; not leashed or muzzled, 2333; condition of control not known, 163; licensed dogs biting, 1254; ownerless dogs biting, 247; vicious dogs destroyed, 796; dogs found rabid by laboratory examination, 24. There was only one case of human rabies reported, which was fatal. There were 24 cases of rabies in dogs.

Levy of Baltimore reports a case of facial paralysis following Pasteur antirabic treatment. The paralysis involved both sides of the face and began 73 days after starting prophylactic inoculations. There are on record 150 cases of paralysis following the use of serum, a very small number compared with the hundreds of thousands of persons who have received inoculations. Of the 150 cases of paralysis, 25 died. Levy's patient was a neurotic subject and a heavy smoker. The brain of the dog which scratched him showed no evidence of rabies, but he insisted on having prophylactic injections.

The exact etiology of these paralyses is not understood. J. C. Geiger of the California State Board of Health, asserts that the neuritis and paralysis are most probably due to the intensive form of Pasteur treatment.

RACING. Thoroughbred racing had one of the most prosperous years of its history in 1917. Large crowds attended the meetings at the tracks near New York City, while the interest shown in the sport at Saratoga was greater than in a decade. In Maryland all records were broken in the class of horses competing and number of spectators.

Willis Sharpe Kilmer, practically a newcomer to the sport, headed the list of winning owners on the Eastern tracks during 1917, with a total of $63,902. Of this amount his sterling two-year-old, Sun Briar, contributed $58,505. Second on the list comes August Belmont with winnings of more than $57,000. Other leaders were: George W. Loft, $55,000; Wilfred Viau, $52,000; A. K. Macomber, $47,000; R. T. Wilson, Jr., $45,000; H. P. Whitney, $42,000; James Butler, $41,000; Joseph E. Widener, $38,000; Brighton Stables, $35,000; Andrew Miller, $35,000; John Sanford, $25,000.

The leading horses in the various divisions were: 2-year-old colts, Sun Briar; 2-year-old fillies, Rosie O'Grady; 3-year-old colts, Omar Khayyam and Hourless; 3-year-old fillies, Sun Bonnet; older horses, Old Rosebud, Borrow, Boots, and Pan Zareta; jumpers, St. Charlcote.

The winners of the more important stakes in 1917 were: Metropolitan Handicap, R. T. Wilson, Jr.'s Ormesdale; Futurity, George W. Loft's Papp; Brooklyn Handicap, H. P. Whitney's Borrow; Excelsior Handicap, Andrew Miller's Roamer; Carter Handicap, H. C. Applegate's Old Rosebud; Suburban Handicap, A. K. Macomber's Boots; Saratoga Handicap, Andrew Miller's Roamer; Kentucky Handicap, R. L. Baker's King Gorin; Kentucky Derby, C. K. G. Billings's Omar Khayyam; Latonia Derby, A. K. Macomber's Liberty Loan; Lawrence Realization, Wilfred Viau's Omar Khayyam; Keene Memorial, A. K. Macomber's Tracksend; Breeders' Futurity, K. D. Alexander's Escoba.

W. Crump was the premier jockey of the year, riding in more than 650 races and finishing first 137 times and second, 116. F. Robinson rode 104 winners and captured 93 second places.

The year was notable for the top prices thoroughbreds brought. Cudgel went for $30,000; Omar Khayyam, $26,600; Tippity Witchet, $20,500; Liberty Loan, $20,000; Westy Hogan, $20,000; Kashmir, $20,000; North Star III, $20,000.

One world's record was established, two horses sharing in the honor. H. P. Whitney's Borrow ran the mile and a furlong of the Brooklyn Handicap in 1.49 ⅖ with 117 pounds up when he defeated his stable mate, Regret, by a head. A few days later A. K. Macomber's Boots, carrying 127 pounds, equaled the mark in winning the Brookdale Handicap.

The tracks in Canada closed at the end of July because of war measures, although up to that time the sport had been well patronized. Racing was further curtailed in England, only a few of the feature events being contested. Gay Crusader, owned by Mr. Fairie, proved to be the best English horse of the year. He won the New Derby, the Two Thousand Guineas, and the September Stakes.

Trotting and pacing activities flourished in the United States and Canada during 1917, although the Dominion found it necessary to curtail some of the fall meetings. There were 1100 separate meetings held in the two countries, a total of $448,217 being distributed to winning horses on the Grand Circuit alone in a period of fourteen weeks. Early Dreams was the biggest money winner with $22,210.

St. Frisco was the champion trotter of the year, covering a mile in 2:01¾. The leading pacer was Miss Harris M., which went a mile in 2:00, the fastest time ever made by a mare. The former record, 2:00¼, was made by Dariel in 1903. Sixty-four trotters entered the 2:10 list in 1917 and 102 pacers. The leading driver of the year was Walter R. Cox, who won forty races.

RACQUETS AND COURT TENNIS. Clarence C. Pell attained the highest honors in racquets during the 1917 season. He won the national amateur racquet championship singles by defeating S. G. Mortimer, the title holder, in the final round by the score of 15-11, 15-1, 15-5 and also won from the same rival in the contest for the gold racquet trophy, the scores being 13-15, 13-15, 15-11, 15-8, 15-10. The doubles racquet championship went to G. H. Brooke and J. W. Wear, who defeated C. C. Pell and S. G. Mortimer 15-12, 15-7, 13-15, 18-14.

Jay Gould retained his supremacy in court tennis, defeating Joshua Crane in the singles championship by a score of 6-2, 6-0, 6-3. An effort to arrange a match between Gould and Walter A. Kinsella, who claimed the open court tennis title, failed.

The squash tennis championship was won by Eric S. Winston of the Harvard Club, New York City. In the class B competition Allen Corey of the Yale Club, New York City, gained the victory. The Harvard Club team captured the Metropolitan League laurels in Class A, while the Yale Club was triumphant in Class B.

RADCLIFFE COLLEGE. A non-sectarian institution for the education of women, at Cambridge, Mass. It is affiliated with Harvard University. In the fall of 1917 there were 87 graduate, 39 special, and 480 undergraduate students—a total of 606, and 147 members of the faculty. Volumes in the library number 35,500. A bequest of $250,000 from Mrs. Abigail W. Howe was received in 1917 to establish two funds, the income of one to be used for fellowships and of the other for general purposes. In 1917 the productive funds amounted to $1,045,000, and the income to $62,000. The college was founded in 1879. President, LeBaron Russell Briggs, LL.D., Litt.D.

RADIATION. See ASTRONOMY.

RADIOACTIVITY. See PHYSICS.

RADIO-TELEGRAPHY. See WIRELESS TELEGRAPHY AND TELEPHONY.

RADIUM THERAPY. The employment of radium for the cure or palliation of various types of malignant tumors, as well as other diseases, was more extensive during 1917 than during the years immediately preceding, possibly on account of the development of a more exact technic and increasing knowledge as to the dosage of this element. The reports of the Radium Institute of London, for the past two years, were published. Here careful records are kept of the results of radium treatment in a large number of cases. A brief statistical summary of the results achieved may be of interest. In epitheliomas of the mouth and pharynx and laryngeal mucous membranes, while temporary improvement was frequently noted, ultimate results were disappointing. Of 58 such cases, 16 were dead at the time of the report, 13 were not improved, 25 were improved, 4 were apparently cured. Isolated nodules in the tongue were treated by burying in them a tiny, powerful emanation tube of 50 mg. or more initial activity, screened with 1 mm. of silver or 3 mm. of platinum, for from 18 to 24 hours, arrest of the disease, followed by fibrous changes, taking place. Of 6 patients with vaginal epithelioma, 4 were apparently cured, 1 improved, 1 not improved. Treatment here consisted in prolonged exposures with powerful applicators heavily screened. In inoperable cancer of the uterus, symptomatic improvement was the general rule, there was arrest of pain, hemorrhage, and discharge, healing of ulcerations, and diminution in the rate of growth. Some inoperable cases were transformed into the operable class. The dosage had to be heavy, and the exposures varied from 30 to 60 hours spaced over a period of from 5 to 10 days. In carcinoma of the rectum, out of 51 cases treated, 33 were improved, 10 not improved, 8 died, and 14 abandoned treatment. In various types of cancer of the breast, of 111 patients treated, 6 were apparently cured, 67 were improved, 24 not improved, and 14 died. Favorable cases of rodent ulcer which did not affect the mucous membrane, bone, or cartilage, and did not exceed 3 cm. in diameter, were almost invariably cured by one treatment, a full strength unscreened applicator being employed. Rodent ulcer patients treated numbered 169; of which 122 were apparently cured, 37 improved, 8 unimproved, 2 died, and 6 abandoned treatment. In lymphosarcoma the effects were remarkably favorable and prompt, the growth beginning to shrink in a few days after treatment and soon entirely disappearing. Other diseases responding favorably were fibroid disease of the uterus, lupus vulgaris, obstinate pruritis (associated with skin lesions, but not in the purely neurotic type), and arthritis deformans.

Barringer, of New York, reports a number of remarkable cures of cancer of the bladder and prostate. His technic consists in thrusting a needle into the growth and leaving it there for about 12 hours. The radium is placed in the end of the needle and extends from the point from one to one and a half inches along the shaft. These are now made of gold and are from four to six inches long. Local anesthesia only is needed, the perineum being injected with novocain in 0.5 per cent solution. The treatment is described as nearly painless and the patient is in the hospital only one day. There is a period of reaction lasting from a few days to several weeks. Treatment may be repeated in two or three months.

It is the opinion of all observers, however, that in spite of the favorable results obtained in many cases of malignancy by radium therapy, frankly operative cases should not be treated by radium, but prompt recourse should be had to the more certain promise of surgery. Ewing states the case as follows:

"Since radium has accomplished a clinical cure in certain advanced cases of cancer, why should it not be employed in operable conditions? The objections to this policy must be frankly stated and clearly recognized. They are, mainly, that all new methods of cancer therapy have inevitably failed, and only the knife has proved reliable; that certain so-called clinically cured cases have relapsed within a few months, and that it is morally unjustifiable to sacrifice the patient's chance from operation for an experiment by any new method."

As indicated above, in the report of the London Institute, radium emanations are beneficial in many other forms of disease. Ordway, of Albany, says that in his experiences with leukemia, surface applications of radium produced striking improvement in the blood, which becomes nearly normal; in the enlarged spleen and lymphatic glands, which are reduced almost to their natural dimensions; and in the general condition of the patient, whose weakened and emaciated appearance may change to one of plumpness and strength. The improvement may last for months or years. Ordway's patients had been previously subjected, without benefit, to the roentgen ray and the administration of benzol. Knudson and Erdos, also of Albany, found that there was an enormous increase in the excretion of nitrogen, urea, and phosphates immediately after exposure to radium. The surface application of radium over the spleen promotes the disintegration of nuclein tissue, which explains the increased excretion of the above substances.

RAILROAD WAR BOARD. See RAILWAYS.

RAILS. See CHEMISTRY, INDUSTRIAL.

RAILWAY ACCIDENTS. The Interstate Commerce Commission in its report of the year ending June 30, 1917, investigated eighty train accidents, comprising fifty-four collisions and twenty-six derailments. These accidents resulted in the death of 174 persons and injuries to 827 persons; the collisions being responsible for the death of 132 persons and the injury of 638 persons; and the derailments for 42 persons killed and 189 injured.

Eleven of the collisions occurred in territory operated by automatic block signals and ten where there were non-automatic block signals, while thirty-three of the collisions occurred on lines operated by the train order and time interval system. Of the eleven collisions in automatic block signal territory, eight were due to failure of enginemen to obey signal directions, and this in the opinion of the commission emphasizes the necessity for the development of some form of automatic train control device to supplement existing block signal apparatus. Such devices have been used on various underground rapid transit and other lines, and have figured in recommendations to Congress by the commission. One of the three collisions in automatic block signal territory was caused by the failure of a switch tender to note the position of the switch indicator, and the other two were caused by improper practices employed in the special territory where the accidents occurred. Most of the collisions in non-automatic block signal territory were due to lax observance or enforcement of rules, and indicated inefficient discipline.

The Interstate Commerce Commission recommended Federal legislation to standardize railroads operating rules which should be easily understood and applied, and not liable to misunderstanding. The report states in reference to twelve of the twenty-six derailments investigated that they were due to defective conditions of tracks and track equipment, and three were due to defective car and locomotive equipment. In nine of the derailments, speed was the direct cause or a contributing factor; one was caused by failure to obey a signal indication; and one to a runaway on a mountain grade, due to neglect of the train crew to make proper test of the brakes. A large percentage of the derailments that occur on American rails are due to defective equipment and defects of roadway. The annual statistical report for January 1, 1917, showed that 98,407.9 miles were operated by the block system and a net increase during the year 1916 of 1832.3 miles.

In the 1917 record, 227 of the accidents in which ten persons were killed and 252 injured were caused by failures of some part of the locomotives or tender other than the boiler. In 1916, there were 537 accidents resulting in 38 deaths and 599 injuries.

It was shown at a hearing that on January 1, 1917, there were 296,033 cars which did not fully conform to the prescribed standards respecting appliances required by the law. On April 12, 1917, the commission entered an order further extending the time to comply with certain paragraphs of the original order for a period of eight months from July 1, 1917. This was due to various causes, such as the shortage of cars, scarcity of labor, inability to obtain new equipment, and congested traffic conditions.

The House of Service Act was vigorously enforced by the commission during the year and 113 cases involving 1197 counts were transmitted to the United States district attorneys. Cases involving 811 counts were confessed and 444 counts were tried, of which 125 were decided in favor of the government and 198 in favor of the carriers. The remaining at the end of the year were still pending decision either in the district courts or in the circuit courts of appeal. Cases involving 878 counts were dismissed, 841 of which were based upon the carriers' failure to report all instances of excess service as required by an order of the commission.

On December 6, in a head-on collision between a freight and a passenger train at Susquehanna, Pa., on the Erie R. R., four employees were killed and two injured.

In a derailment which occurred at Sharon, Ky., on the Chesapeake and Ohio on December 8, the two engines of an eastbound passenger train were thrown from the track and struck the caboose of a freight train on a side track. Four employees of the railroad were killed and three employees and one mail clerk were injured. One of the most serious accidents of the year occurred at Pittsburgh, Pa., on December 24, when a runaway electric car met with an accident which caused the death of twenty passengers and the injury of a large number.

At Houston, Tex., on December 25, three persons were killed and five injured by a locomotive running into a street car.

On December 29, a collision of two passenger trains on the Baltimore and Ohio occurred near North Vernon, Ind., in which seven trainmen and one passenger were killed and twenty others injured. A railway investigation developed the fact, according to the officials, that the conductor and engineer of train No. 2 bound from St. Louis to New York disregarded an order to wait at North Vernon for train No. 23, bound from Cincinnati to St. Louis. Furthermore, an automatic signal was passed by the westbound train, while the caution signal was in the stop position and apparently working properly. This collision had not been investigated by the government at the end of the year.

On December 20, a rear end collision of southbound passenger trains on the Louisville and Nashville at Shepherdsville, Ky., eighteen miles south of Louisville occurred at about 6 p. m.; forty-five passengers and two employees were killed and forty or more passengers were injured. Among those killed were the conductor and flagman of the forward train, who at the time of the accident were said to be responsible for the collision, inasmuch as they had not protected their train at the rear while they were losing time. The train which caused the collision was about two hours late and was going at full speed at the time of impact. The rear car of the local train and the one next to it, both wooden coaches, were split open and completely wrecked by the express, which consisted of one of the heaviest locomotives and nine steel cars. The greater part of the damage was confined to the local train. In addition to the blame attached to those in charge of No. 9, it was also said that the express, which was proceeding at full speed, should have been under control, as the line was being operated on the train-order system. An interesting development of this accident came a few days later when the president, Milton H. Smith, issued a statement to the public proposing that the governor appoint an arbitrary committee to pass on all claims in connection with the accident which could not be settled by direct negotiation between the company and the claimants. Mr. Smith proposed that the decision of this board should be final. He said, "This will save the claimants the delay and expense of litigation, will insure a certain and just determination of their rights, and will guarantee their receiving the full amount awarded instead of dividing it with others. The proposition is not dependent upon acceptance by all claimants, but is open for three months to all who may desire to avail themselves of it."

RAILWAY SIGNALING. During the year further progress towards increased safety was made by the installation of block signals over a total of 2809 miles of road, an amount of about 700 miles greater than the record for 1916. Of this 2785 miles were in the United States and 24 miles in Canada. Of the new block signaling under construction, there was a total of 1653, of which 1647 were in the United States and 6 in Canada; 1240 miles was proposed for installation in the following year. In 1917, 187 interlocking plants were completed, as compared with 98 in 1916, and there were under construction 164 such plants, as compared with 119 in the previous year; 108 new plants were proposed for 1918, a number 31 less than for the previous year, although this figure was hardly dependable, as important projects being considered by the various lines were not announced. An important work of safety involving several millions of dollars was an extension of the block signals on the New York City elevated and subway lines and the elaborate plans that were being made for the equipment of the new subways. Thus the Brooklyn Rapid Transit Company proposed to install 523 signals with apparatus for operation of automatic block signals, some of which was to be available in either direction.

Electric pneumatic interlocking was installed on the D. L. and W. at Buffalo terminal and by the Interborough Rapid Transit Company on the new subway and elevated lines. The New York Central at Berea, Ohio, also installed interlocking and has 56 working levers, of which 23 were added in 1917.

GREAT BRITAIN. In Great Britain, during 1917, a fairly successful record for safety was maintained, with but one fatal accident to a passenger train. This occurred on January 3 at Ratho on the North British Railway, and resulted in the deaths of twelve passengers. It was a collision between a light engine and an Edinburgh express, and was due to a misunderstanding of instructions from a signalman to an engine driver. Several accidents to troop trains occurred during the year, one on September 15 on the military railway in North Yorkshire, in which three soldiers were killed. In connection with the investigation of various railway collisions, a recommendation was made that an investigation should be held to determine a standard type of detonator as a fog signal. In the investigations, testimony brought out that under certain conditions the engine drivers and firemen could not hear the explosion of these fog signals, so that their improvement and standardization was considered essential.

RAILWAYS. Immediately on the outbreak of the war in August, 1914, the English Government appointed a Railway Executive Committee consisting of the general managers of the principal railways, to operate all the roads as a single system. With the entrance of the United States into the war a similar situation had to be met. The American government, however, took two successive steps in dealing with the situation; one on April 11, 1917, when it sanctioned the creation of the so-called Railroad War Board, consisting of five railway presidents, and permitted the elimination of some of the existing competition; and the second, when President Wilson on December 26, 1917, acting under a paragraph in the law of August 29, 1916, appointed William G. McAdoo as director general of railroads in addition to being secretary of the treasury. In making this appointment the president promised to, and later did, ask Congress to guarantee to each railroad company a net operating income equal to the average yearly net operating income in three years prior to June 30, 1917. Net operating income is the amount which is left from a railroad's total revenue from freight and passenger business after operating expenses and taxes are paid. Net operating income therefore is the amount which the railroad company has available for paying interest on its bonds and for dividends on its stock. In other words, Congress was to guarantee that no matter how expenses mount up and no matter how large or how small a part of the business is carried by any one road, each company will have an amount equal to the average in the last three years available to pay interest charges and dividends on stock.

A concrete instance will make this plainer:

Atchison, Topeka & Santa Fé

	1915	*1916*	*1917*
Total Oper. Revenues	$117,665,587	$133,762,392	$156,179,121
Oper. Exp.	76,091,554	83,730,960	96,333,569
Taxes	5,522,622	6,251,439	9,893,877
Oper. Inc.	$36,051,401	$43,779,993	$49,951,675

The government therefore would guarantee this company $43,261,023 operating income. The interest on the company's bonds amounted to $12,112,844 in 1917, leaving, if the government guarantee had been in operation, about $31,000,000 surplus. The rate of 5 per cent on the preferred and 6 per cent on the common stock maintained in 1917 called for about $19,250,000.

This average net operating income, $43,261,023 in the case of the Atchison, was called the standard return and any amount earned above it was to go to the government. The government thus could use an excess earned by one road to make up a deficit of another road, while if the total excess was greater than the sum of the deficits the government would make a profit. If the deficits were the greater the government would have to stand the loss.

The government bill also provided that the companies might make additions and betterments and pay for them with their own funds, in which case their standard return would be increased by an amount equal to interest at a rate to be fixed by the president on the amount so spent. The companies were forbidden to pay a higher dividend than the average rate for the three years ended June 30, 1917, without the consent of the president, but the president might authorize a company which had not been paying any dividends to pay dividends at a rate to be determined by him. It was planned that Congress would appropriate $500,000,000 as a "revolving fund from which the president could make up a deficit and pay for additions and betterments, new cars, and locomotives, etc. The government was to receive interest on such expenditures. The companies might sell their own securities to raise new capital and the president was authorized to buy and sell railroad company securities.

The bill provided that the president might exercise the powers granted him through whatever agencies he sees fit and fix reasonable compensation for service. The president was authorized to extend the Federal Workingmen's Law to railroad employees. Suits can be brought against the roads as common carriers as heretofore but without the president's written consent no attachment or execution can be obtained against common carrier property.

The bill provided that any person or corporation employed by or acting for any road or any shipper or other person who shall fail to observe the provisions of the law or interfere with or impede the use or operation of any transportation system taken over by the president shall be liable to a maximum fine of $5000 or imprisonment for not more than two years. It was under this provision, of course, that the president could prevent or punish strikes and deal with the railroad labor unions.

The last section of the bill provided that "The Federal control of transportation systems herein and heretofore provided for shall continue for and during the period of the war and until Congress shall thereafter order otherwise."

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DIRECTOR GENERAL WILLIAM G. McADOO AND THE NATIONAL RAILWAY BOARD

From Left to Right, Julius Kruttschnitt, Chairman of the Executive Committee Southern Pacific; Howard Elliot, Chairman Board of Directors Northern Pacific; Mr. McAdoo; Judge John B. Payne, of Chicago, General Counsel of the Emergency Fleet Corporation and acting in the railroad conference as Mr. McAdoo's Legal Adviser; Samuel Rea, President of the Pennsylvania; and Hale Helden, President of the Chicago, Burlington & Quincy. Fairfax Harrison, President of the Southern and a member of the board, is not in the picture.

The extent of the change in the entire economics of American railroading was so great as to make adequate description somewhat difficult. Competition was the driving force back of the development of railroad service as the railroads were rendering it before 1917. After rate cutting was abandoned in 1906 it became necessary to compete by means of giving the shipper something in addition to the actual transportation of his freight, and of giving the passenger something more than transportation from one point to another. It was difficult for any one who had not been actually in railroad service to realize how keen this competition had been. The necessity for it was ground into every railroad man, high or low, until he saw his business only through the colored lenses of competition. So compelling a force was it, that men with the strength of character and ability to work up from employees to the position of president, and with personal convictions founded on years of experience as to the utter wastefulness of literally hundreds of practices in both freight and passenger service, were unable to stand out against their own subordinate traffic officers when it came to cutting off practices that were used as a means of competition.

When the railroad heads got together to ask for the rate increases in 1910, the foundation was laid for coöperation, but until the beginning of the war and the formation of the Railroad War Board, coöperation existed only to the extent of trying to present a united front to the Interstate Commerce Commission. The authority under which the War Board was formed was really in its last analysis, a personal pledge on the part of each of the presidents who were present at the memorable meeting in Washington on April 11, 1917. This pledge was comprehensive. A president in the operation of his own road had no more authority, even in theory, than was voluntarily given to the War Board. The executives who were present at this meeting returned to their offices and presumably nearly all of them held meetings of their board of directors at which the pledge given by the president was confirmed by the directors. The formation of the War Board was a recognition of the necessity for coöperation as a guiding force, in place of competition. As in every other business, the personal equation entered strongly into the methods of obtaining the desired result. The War Board under the leadership of Fairfax Harrison, at first went somewhat slowly. Every one of the five men composing the board (Fairfax Harrison, president of the Southern Railway; Samuel Rea, president of the Pennsylvania; Julius Kruttschnitt, chairman of the executive committee of the Southern Pacific; Hale Holden, president of the Chicago, Burlington, and Quincy, and Howard Elliott, formerly president of the New York, New Haven, and Hartford) could have named off-hand fifty or one hundred practices which were wasteful and ought to be discontinued. To have discontinued many of these practices by mutual agreement would have been unlawful and subjected the "conspirators" to liability to a jail sentence. Moreover, the board was dealing with men whose life work had been the exercising of authority, not the taking of orders. Without the help of patriotism and the change which patriotism brought about in the business ethics of railroading, the work which the War Board accomplished would have been quite impossible. In the first place, patriotism on the part of the people and of State commissions permitted coöperation in the elimination of useless service that would have been inconceivable except under the new stimulus.

The change in attitude of the railroad managers permitted arbitrary settlement of questions of competitive practices, more especially in the use of freight cars, that would have caused endless friction had not this change in ethics taken place. There was superimposed on the duty which railroad managers owed their stockholders, a new, and what was recognized by most of them a paramount duty, that to their country. Of course, all railroad men were not equally quick to step forward and to give in spirit as well as in letter the coöperation which often necessitated sacrifices of stockholders' interests, and an analogous situation existed among shippers and State commissions. It would be fatuous to say that the War Board accomplished all that could have been accomplished by a change from competitive methods to coöperative methods. Competitive and wasteful passenger service between cities like Chicago and St. Louis and New York and Chicago still existed when the president appointed Mr. McAdoo railroad director.

Shortly after the formation of the War Board, President Wilson appointed Judge Robert S. Lovett, Chairman of the Executive Committee of the Union Pacific, and a staunch political supporter of Mr. Wilson, as director of priority. Furthermore, Daniel Willard, president of the Baltimore and Ohio, had already been made chairman of the Advisory Committee of the Council of National Defense. The railroad people themselves still had the Railway Executives Advisory Committee, described in the 1916 YEAR BOOK, of which Frank Trumbull was chairman. The activities of this latter committee were confined largely to trying to place before the Joint Committee of Congress which was investigating the railroad question, the desirability of Federal regulation to the exclusion of State regulation. In addition to these various committees there was still the Interstate Commerce Commission, which had absolute control of the rates which railroads could charge for freight and passenger service.

In a very general way the superstructure placed above the railroad companies was: the Interstate Commerce Commission (a Federal government body) with jurisdiction over rates and therefore controlling railroad revenues; the State Commissions (State government bodies), also with jurisdiction over rates and with the additional jurisdiction over the sale of stocks or bonds of railroads; Daniel Willard of the Advisory Committee of the Council of National Defense (a government official) representing the president and the Executive Department of the government in its dealings with the railroads; Judge Lovett, director of priority (a government official), charged with designating what kinds of freight should be given precedence over other kinds; The War Board (a voluntary association of railroad officers) dealing with the actual operation of the railroads and particularly with the distribution of empty freight cars; and finally the Railway Executives Advisory Committee (a voluntary association of railroad officers) dealing with Congress.

Distribution of empty freight cars and precedence in the movement of freight are so intimately related that the attempted separation of these two functions tended to defeat the very end aimed at by both the War Board and Judge Lovett. Furthermore, the army issued its own priority orders, the fuel administrator tried to do likewise, as did also the food administrator. The really remarkable thing was that very real accomplishments were made despite this superstructure and the explanation was probably that notwithstanding the overlapping and conflicts in authority, all concerned were actuated by desire to do the best possible for the country at war.

On December 31, the Railroad War Board tendered its resignation to Mr. McAdoo, at the same time turning over to him its subcommittees and the organization that had been built up to do its work. Mr. McAdoo then appointed a temporary advisory committee to assist him. This corps of assistants consisted of John Skelton Williams, controller of the currency as advisor on financial matters; Hale Holden, president of the Chicago, Burlington, and Quincy Railroad and member of the former War Board, as supervisor of the organization turned over to Mr. McAdoo by the War Board; Henry Walters, capitalist and chairman of the Board of Directors of the Atlantic Coast Line Railroad, as advisor on operating matters; Edward Chambers, vice-president in charge of traffic of the Atchison, Topeka, and Santa Fé Railroad, as advisor on traffic matters; Walker D. Hines, a lawyer and chairman of the Executive Committee of the Atchison, Topeka, and Santa Fé, as advisor on legal matters, and A. H. Smith, president of the New York Central, given charge of operation in the territory east of Chicago and north of the Ohio and Potomac rivers.

The reason given by the War Board for its resignation was that its members were needed in the service of their individual roads, but the real reason appeared to be a decision on the part of the board to clear the way for Mr. McAdoo to build up an organization with a personnel entirely of his own choosing. This assumption was borne out by the retention of Hale Holden of the Burlington and the substitution of the president of the New York Central for the president of the Pennsylvania, the reasons for which substitution were not obvious from a railroad point of view

The other part of the president's solution of the railroad problem—the government guarantee of net operating income—was of the greatest importance. Some such thing was a necessity if railroad securities market values were to be kept from utter collapse. These securities held by all classes of investors, but by savings banks and insurance companies more largely than by any other class, were one of the most fundamental forms of American investment. It was therefore an economic paradox that at the very time when the physical wealth—the railroad net of the country—which these securities represented had the greatest value in its history, because more used and more necessary than ever before, the securities themselves were selling in the market at their lowest prices.

While the immediate and plainly discernible causes for the government taking control of railroad operation are easily enumerated—freight congestion, inability to pool facilities without also pooling earnings, extremely shortsighted and repressive regulation contradicting priority orders, etc.—there are other deeper lying causes not so easily definable. Before attempting this, a brief outline of the year's development in regulation is of importance.

Progress of Regulation. All of the roads had joined together in asking for permission to raise freight rates 15 per cent. The Interstate Commerce Commission again refused to grant any substantial increase in an opinion handed down in June, allowing, however, what amounted to about a 6 per cent increase to the Eastern roads in rates, but announced that the Commission stood ready to reopen the case if circumstances demanded it. On the commission's own initiative, the case was reopened on November 5, with so much "speeding up" that the request of the railroad lawyers for sixty days in which to prepare their case was refused. Notwithstanding this sudden and wholly unprecedented quickness of action, no decision was handed down before the president's action taking over the roads. Instead, on December 5, the commission made a special report to Congress declaring that absolute unification of the railroads during the war was indispensable. The majority of the commission were of the opinion that if Congress would pass the necessary laws permitting pooling this unification could take place under private ownership and operation. Commissioner McChord, however, in a minority opinion held that government operation was essential.

At the beginning of the year the Interstate Commmerce Commission consisted of seven members. On August 9, 1917, Congress passed a law increasing the number to nine and on September 29 President Wilson appointed George W. Anderson, United States district attorney for Massachusetts, and Clyde B. Aitchison secretary for the valuation committee of the National Association of Railway Commissioners (State commissions) as the two new members of the Interstate Commerce Commission, with terms ending in 1922 and 1921 respectively. At the same time the president appointed Robert W. Woolley, formerly director of the mint, to succeed Judson C. Clements, who had recently died. As the commission was constituted at the end of 1917 the Southwest was the only part of the United States not represented on the commission. Commissioner Anderson came from New England, Commissioner Aitchison from the Pacific Coast, Commissioner Woolley from Virginia, Commissioner Harlan from Illinois, Commissioner Clark from Iowa, Commissioner Meyer from Wisconsin, Commissioner Hall from Colorado, Commissioner Daniels from New Jersey, and Commissioner McChord from Kentucky. The law of August 9 authorized a reorganization of the commission into divisions each with jurisdiction over various departments of the commission's work, with full powers of the commission subject to its review.

Valuation. The work of valuation of the railroads under the direction of Charles A. Prouty, head of the division of valuation of the Interstate Commerce Commission proceeded slowly but the significant event in connection therewith was the filing of a memorandum with Congress in which Director Prouty implied that no final value would be arrived at by his division and under the present valuation act. In the course of this memorandum Director Prouty said:

"As a member of the Interstate Commerce Commission I several times joined with my associates in recommending to Congress that it provide for a valuation of railroad property, and in so doing I for one understood that a valuation in dollars of the property as a whole was called for. There can be little doubt that a majority of the members of the Congress which enacted this measure understood that it provided for a statement of the value of the railroad properties dealt with in money and that the act was so accepted by the country at large.

"It is still my own conviction that an ultimate value for rate-making purposes should be stated and that the full benefit of this valuation can not be realized unless this be done. . . . This does not, however, at all mean that any part of the work now being done or of the money now being expended is thrown away because the commission is not required to establish at this time such ultimate value. Before such a value can be named the facts which the commission is collecting and reporting to Congress should be before the tribunal which fixes it. The facts are being prepared under the present act and a final value can be quickly stated when Congress has determined by whom and possibly by what rule such value shall be determined."

The valuation which, however, would not fix a value was supposed to be completed in 1920. If government ownership were to follow this new experiment in government operation even the incomplete and inconclusive results of the department of valuation would be of great importance.

The hearings begun in 1916 before the joint congressional committee investigating the railway situation, of which Senator Newlands of Nevada was chairman, were continued in 1917. Senator Newlands died suddenly on December 24 and the committee had not up to the time the YEAR BOOK went to press made any report to Congress.

WAGE INCREASES. The Adamson Law which compelled the railroads to pay train and engineers overtime after eight hours' work passed by Congress in 1916 and described in the 1916 YEAR BOOK was taken to the United States Supreme Court on a test case. The railroads continued to pay the old schedule of wages, but kept a record of each man's work over eight hours with the understanding that if the law was held constitutional the companies would immediately pay the extra wages accrued under this law.

By March the decision of the Supreme Court not having as yet been handed down in this case —the leaders of the four brotherhoods (enginemen, conductors, firemen, and trainmen) renewed their efforts to compel the managers to pay the increased wages whether or not the court held the Adamson Law constitutional. Up to the time of the meeting between the brotherhood leaders and the National Conference Committee of Managers on March 15 the labor leaders made no threat to strike. The managers committee again offered to put the whole question to arbitration as they had offered to do before the law was passed but the labor leaders refused. President Wilson held a cabinet meeting on Friday the 16th and then held a conference with various labor leaders and telegraphed to the managers' committee urging that no strike be allowed to occur. The urgency of this message was indicated in the last sentence which was as follows: "The safety of the country against manifest perils affecting its own peace and the peace of the whole world makes accommodation absolutely imperative and seems to me to render any other choice of action inconceivable."

The strike was set by the brotherhood leaders for Saturday evening but was postponed for forty-eight hours. Almost continuous conferences were held up to 2.30 o'clock Monday morning, when it was announced that the managers had in view of the national crisis—news had just come of the sinking of three U. S. vessels by German submarines—decided to grant any and all demands necessary to prevent a strike, and left it to the Committee of the Council of National Defense to fix the terms which would suit the labor leaders. This committee which consisted of Franklin K. Lane, William B. Wilson, Daniel Willard, and Samuel Gompers gave the brotherhoods what they demanded in full. This amounted to paying for a full eight-hour day if a train made a run of 100 miles even if the time consumed was only three or four hours and paying overtime for each additional mile run. If, however, less than 100 miles was made in eight hours, overtime would be paid for each additional fraction of an hour. This award was made early Monday morning. On Monday afternoon the Supreme Court handed down its decision holding the Adamson Law constitutional. The basic principal established in this notable decision was that Congress had the right to regulate wages in the interests of the public.

EARNINGS AND EXPENSES. A new high record was made in railway earnings the total operating revenue for the 231,047 miles of railroad (including all the larger railroad companies of the country) which had reported to the Interstate Commerce Commission at the time the YEAR BOOK went to press for the ten months, January to October, 1917, was $3,350,721,651. This compares with $2,991,462,057 for the corresponding ten months of 1916—previously the largest total for ten months in the history of the country. The earnings per mile of line for the ten months of 1917 averaged $14,502, an increase of 11.8 per cent over the ten months of 1916. Expenses mounted up, however, even faster than earnings. Total operating expenses in the ten months of 1917 were $2,341,081,625 and in the ten months of 1916 were 1,959,970,384. Per mile of line expenses averaged $10,132 in 1917 (ten months) and $8502 in 1916 (ten months), an increase of 19.2 per cent.

The increase in revenue resulted from the movement of a much larger quantity of freight and a greater number of passengers. The movement of the first draft of the National Army to cantonments and of the National Guard to points of embarkation was in itself a large passenger movement and there was also a large amount of travel connected with the placing of government contracts and other government war activities. Government business added to an already extraordinarily active general business accounts for the increased amount of freight shipped. A railroad, which is an intricately complicated machine manufacturing transportation, has a certain limited capacity like any other machine and if an attempt is made to exceed this limit manufacturing costs run up disproportionally. The great increase in business therefore was a gain to those roads which were not theretofore using their tracks, locomotives, and terminals to the fullest capacity. To roads like the Pennsylvania, however, which were already handling all the business that they could economically, the added strain increased cost of operation out of all proportion to the increase in earnings. Expenses of course increased on all roads but the eastern trunk lines were much the hardest hit. The working of the Adamson Law also increased expenses and added to this were big increases in cost of coal. Fuel and trainmen's wages together make up about half of "transportation" expenses on most roads. It can readily be seen therefore how seriously the railway expenses were affected by being compelled to pay overtime after eight hours instead of ten and having to pay 30 to 80 per cent more for coal.

NEW CONSTRUCTION AND RAILWAY CREDIT. Even before the entrance of the United States into the war there was almost no market for steam railway securities. There was only a small public demand for them and even this was discouraged by banking and bond houses. Public utility and industrial bond issues were more profitable to the bankers and they were therefore given preference in bankers' offerings. The uncertainties of the railway situation were so great as to disincline conservative institutions like savings banks and insurance companies from further investing in railway bonds. The prices of materials were so high that not only were capital expenditures held down to a minimum but upkeep was deferred on a considerable scale. Maintenance of way expenses increased in 1917 over 1916 (nine months in each case) 6.2 per cent.

Wage rates, however, had risen steadily and they were accompanied by decreased efficiency on the part of the men so that the labor return per dollar of expenditure fell sharply. As a result, the increase in maintenance of way expenditures of 6.2 per cent measured in dollars was in reality an actual decrease of no mean proportions, measured in terms of productive work on the property. This occurred at a time when the facilities were being taxed to their utmost to handle the traffic and when the wear and tear on them was correspondingly great. This condition necessarily led to an accumulation of deferred maintenance which it would be necessary to take up in the near future if the railways were to continue to perform the efficient service which the country was demanding of them.

The outstanding feature of the year's work in the maintenance of way department was the constantly increasing scarcity of labor. The cessation of European immigration, the shutting off of the Mexican supply through the enactment of the alien labor law, the transfer of over 1,000,000 men from industrial to military service, and the widespread activity in industrial work all served to increase the shortage of men throughout the country.

Figures compiled by the *Railway Age* showed that during 1916 a total of 962 miles of new line was completed in the United States and 207 miles in Canada. The construction of new railways in the United States during the last three years, which had very nearly equaled the round figure of 1000 miles per annum, was far below any corresponding three years since the Civil War; even during the panic period of the middle nineties, the mileage constructed during 1894, 1895, and 1896 exceeded that of the three years ended by 1917 by 62 per cent.

In second-track construction the showing of the year 1917 was somewhat better, 613.41 miles having been completed as compared with 312.31 for 1916, 356.28 for 1915, and 565.58 for 1914. It was small, however, as compared with 1263 miles of second track completed in 1913 and 1072 miles in 1912. Of third track 35.78 miles were completed, and of fourth or more main tracks 28.37 miles. No second or multiple track construction was reported for Canada during the year.

California led the United States in railway construction with the completion of 108.89 miles of new line, Alaska was second with 108 miles completed on the Government Railway, Montana was third with 94.4 miles, followed by Utah, with 67.20 miles, Texas with 63.50 miles, and Pennsylvania with 61.89 miles. The geographic distribution of these five leading States was indicative of the scattered location of the new mileage which permits of no precise statement other than that the increased mileage was less than 10 miles in each of 20 States and that all of New England, New York, New Jersey, Delaware, and Maryland, were included in this group.

The longest continuous piece of railroad completed in 1917 was 60 miles of main line on the United States Government Railway from Matanuska, Alaska, to Montana Creek. The next longest piece was on the Hetch Hetchy in California, 52 miles. Of the second track work, that done by the Union Pacific in Wyoming, 95.11 miles, and by the Southern Railway in South Carolina, 76.6 miles, were projects far surpassing anything else of the kind done in the United States during the year.

In 1917 for the first time since the first railroad in the United States was built in 1831, there was considerable mileage of road voluntarily abandoned by its owners or taken up and sold as junk. In 1917 there were 523 miles of railroad actually taken up or in the process of being taken up and sold for junk. In addition there were 509 miles of road on which operation was abandoned and 395 miles of road which the owners had asked permission from State commissions or legislatures to abandon; and, as a matter of fact, this latter figure did not represent all of the road which would be taken up and sold as junk if the owners could get permission so to do. State commissions have in the past almost invariably refused to permit the abandonment and actual taking up of railroad mileage. It was necessary to go to court but the courts apparently had definitely established the rule that owners of an unprofitable railroad might discontinue the operation of it and dispose of the rails, bridges, etc., as junk.

Although the owners of many of the roads abandoned would probably offhand ascribe their difficulties to pernicious regulation by State commissions, a study of individual cases will show that this was not the direct cause. There was quite a world of romance and pathos surrounding many of these railroad ventures which had at last proved failures. Hopes, sacrifices, great expectations, rebellion against the laws of economics—this was the stuff of which most of these failures were made. It is not difficult now to see the mistakes, to recognize that the ventures were foredoomed to failure. In most cases it was bad business judgment, not bad regulation, which caused the failure, but it was highly significant that the projects should be given up. The high price of old rails, scrap iron, etc., was a contributing factor, but only in a superficial sense. It was no real underlying cause of the final abandonment of hope.

The Farmville and Powhatan, the predecessor of the Tidewater and Western, was built and merged with the Bright Hope Railway in 1889-90. The development of Powhatan and Chesterfield counties, Va., during more than twenty-five years failed to make the Tidewater and Westen a paying railroad. Some of the roads abandoned were built with the money and labor of farmers. The Chicago, Anamosa, and Northern, and the Creston, Winterset, and Des Moines, both in Iowa, were built in this way. Both of these roads were the result of a desire for transportation facilities—the farmers wanted railroad facilities and assessed themselves to pay for building the roads. In the case of the Denver, Laramie, and Northern, however, the money to build the road was raised not in the territory served—central Colorado—but from Kansas farmers' savings. The list is pretty surely incomplete even for all roads that have actually been abandoned; neither does it show some very important roads which the owners wish they could abandon. It is probable that many holders of Kansas City, Mexico, and Orient securities would be glad to see that road torn up and sold for junk. Raising the money to build it was one of the most remarkable feats of promotion in American railroad history. It was an example of how deeply fixed was the investor's faith in the future of American railroads.

The significance of this abandonment of some hundreds of miles of railroad was that it showed that the faith which made possible the building of the Kansas City, Mexico, and Orient was not merely shaken but was actually destroyed. The abandonment of railroads in 1917 marked a very important stage in the economic development of the United States.

Car and Locomotive Situation. There were built during 1917 119,363 freight cars for domestic use but only 79,367 freight cars were ordered. There was a material shortage of new freight car equipment even for ordinary conditions and particularly so for such extremely busy times. Prices, labor, material, deliveries, and lack of funds all contributed to keep the railroads out of the market. The number of freight cars ordered for domestic use during the year 1917 was the smallest number since 1908; it was less than half of those ordered the previous year and was about 58 per cent of the average number ordered per year during the previous ten years. Of about 80,000 cars over 21,000, or about 27 per cent, were ordered from railway company shops in contrast to 19,322 or 11.7 per cent the previous year. This was accounted for by the poor deliveries the car builders were giving during the early part of the year; but with that situation much improved the railroads would be able to devote their facilities to car repairs, leaving the new work for the builders.

The proportion of all-steel, wooden, and other kinds of equipment to the total number of cars ordered remained practically the same as the previous year. There was a decrease in the percentage of box and hopper cars ordered and an increase in the percentage of refrigerator, gondola, flat, and tank cars ordered.

There were more wooden cars built in 1917 than the year before. Of the 119,363 cars built for domestic use, 12,273 were of wooden construction and 61,115 all-steel. Over 11 per cent, or 13,488 cars, were built by the railroad companies themselves. This was a much larger percentage than usually obtained.

Figures compiled by the *Railway Age* show that the number of locomotives ordered in 1917 was the largest for seventeen years, 7642 locomotives, for domestic or foreign use, having been placed on the books between January 1 and December 31. The output of locomotives, as distinguished from orders placed, during the same period, namely, 5446, represented a production that had been exceeded but three times since 1899—in 1905, in 1906, and in 1907.

The orders for locomotives in 1917 were divided as follows: Domestic, 2704; for the United States government for service in France, 2057, and for foreign countries, 2881.

Locomotive Design. There had been developed quite a number of mechanical devices which, applied to a steam locomotive, would add greatly to its hauling capacity with the same or less fuel consumption. Furthermore, the design of a locomotive for the particular work which it had to do had been studied much more carefully than ever before. The Pennsylvania Railroad was a pioneer in this work and had studied and tested out designs in a thoroughly scientific way. The inability of railroads to get new locomotives because of the high price of material and demands of the war on locomotive builders had given extraordinary importance to devices which would increase capacity of existing locomotives and while therefore some of the devices mentioned below have been developed during the few years prior to 1917 it is proper to describe them in an account of the 1917 railway year. The most important of these devices are the superheater, the brick arch, the feed water heater, the mechanical stoker, automatic fire door, and power reverse switches.

The superheater is a combination of tubes and chambers, by means of which the steam, after it has been generated in the locomotive boiler, is conducted back through the flues in the boiler before being let into the cylinders. In this way the steam is charged with additional heat so that when it is admitted into the comparatively cold cylinder much less condensation takes place than would occur were the steam saturated—that is, not superheated. Since a considerable part of the heat which passes through the flues is wasted through the smoke-stack, the utilization of this heat to charge steam gives the locomotive additional power. Tests have shown that a locomotive equipped with a superheater will haul 20 per cent more than an exactly similar locomotive without a superheater.

The brick arch is a set of fire bricks supported on tubes extending from near the bottom of the front of the fire-box upward and backward over the surface of the fire for a certain distance. It converts an open fire into a furnace and thus increases the heat per ton of fuel consumed.

The feed water heater is a device by which the water drawn from the tender tank is heated before it is injected into the boiler. The heat used is that which is on its way to the smokestack and would otherwise be wasted. Like the superheater therefore it gives additional power per ton of coal consumed.

There are various types of mechanical stokers but the result obtained is the feeding by mechanical means of coal from the tender into the fire-box. The coal is conveyed from the tender through a large tube and shot by means of a pump or other device into the fire-box. There is no fuel economy but this device permits the firing of a locomotive beyond the physical capacity of one man.

The automatic fire-door is a device by which the fire-door is opened when the fireman steps on a pedal as he is about to toss a shovelful of coal into the fire-box and automatically closes when the fireman turns to get another shovelful. It conserves both the energy of the fireman and fuel because the fire-door is open a smaller part of the time.

The power reverse switcher is a pump with attachments which operate the reverse lever which controls the length of stroke of the piston in the cylinder. With the very heavy engines now being used it would be impossible for a man to operate the reverse lever to shorten the piston stroke when the engine was working at anything but a very low speed.

RAILROAD BANKRUPTCY AND REORGANIZATIONS. The reorganizations of railroad properties effected in 1917 were important. The receiverships that took place were quite unimportant. Three large railroad systems were reorganized during the calendar year, two—the Missouri Pacific and the Pere Marquette—by means of foreclosure sales and one—the Chicago, Rock Island, and Pacific—by means of a voluntary exchange of debentures for preferred stock and a subscription on the part of a syndicate of bankers to approximately $30,000,000 preferred stock, and on the part of former directors, to $5,000,000 preferred stock.

If the Chicago, Rock Island, and Pacific organization had been an immediate and unquestioned success it would have proved a striking example of the exception to the general inability of railroads to do any financing in recent years through the issue of stock. As a matter of fact, however, the reorganization had not up to the end of 1917 by any means demonstrated itself a success and the purchasers of the new preferred stock were faced with the possibility of a heavy loss. When the road went into the hands of receivers there were various individuals and financial institutions with conflicting interests in it. There were the Reid-Moore people, including D. G. Reid and Judge W. H. Moore, who were in control prior to the receivership. There were also various Chicago capitalists and estates representing conservative, legitimate investment interests, and, of course, in addition, a great number of individual bondholders, including large financial institutions in the East. Superimposed on this, or rather inserted in this complication, were the followers of N. L. Amster, a Boston banker, who himself had comparatively a small investment interest in the property. Most of the eastern capitalists and financial institutions with the exception of the followers of Mr. Amster, favored a foreclosure sale and thorough reorganization. Amster's followers held out for a reorganization without foreclosure and they were rather surprisingly aided by the unprecedented prosperity which the Rock Island enjoyed in 1916. Whereas in the previous three years total net income had averaged less than $15,500,000, the total net income in 1916 was $23,429,000. It was this fact, probably, which had a good deal to do with persuading the conservative Chicago investment interests to side with the Amster faction. The fact that there was $23,429,000 available for interest in 1916 and that interest charges without foreclosure sale and scaling down of outstanding securities was only $15,350,000, was an argument for reorganization without foreclosure that proved too strong for eastern capitalists who had advocated a thorough reorganization.

Combined with this exceptional prosperity was the fact that there was a bitter fight on among the directors of the old company for control. The sale of over $35,000,000 of railroad stock, therefore, could hardly be ascribed to the desire on the part of the capitalists to make this particular investment.

The Missouri Pacific reorganization, while it required $41,000,000 of cash, was put through because it was backed by the great banking house of Kuhn, Loeb, and Co. For years this banking house had been opposing Gould methods of railroad finance and had been acquiring control of the Gould properties, and the Missouri Pacific reorganization, with its subsequent effect on control of the Denver and Rio Grande, was a continuation of a financial policy so broad and backed by such great resources as to overcome the obstacles of raising $41,000,000 new railroad capital, which obstacles would have been insurmountable otherwise.

The Pere Marquette reorganization was the end of a long and exhausting conflict between different financial interests. It has been commented on many times before in earlier YEAR BOOKS.

Looking back on the three important reorganizations of 1917, therefore, we find one, the product of an exceptional and lucky year in earnings for the Rock Island; the second, a consummation of a long sought-after victory for an immensely wealthy banking house; and the third, an acceptance on the part of investors of drastic losses.

The new receiverships are negligible, and of the roads which in previous years went into the hands of receivers and which still had to be reorganized the most important was the Missouri, Kansas, and Texas. If this road was to be soundly reorganized its security holders would have to follow the example of the security holders of the Pere Marquette and accept a very drastic scaling down of the face amount of their holdings. Second in importance was the Boston and Maine. Apparently a sounder system of railroad regulation and a better and higher rate structure for New England would have to be precedent to any acceptable reorganization. There remained among the larger roads the Chicago and Eastern Illinois, for which plans had already been worked out for reorganization, and the International and Great Northern, and the Texas and Pacific, the two latter being Gould properties, which might be reorganized under Gould auspices or might, like the other Gould properties, pass under the control of some strong banking house. See ARBITRATION AND CONCILIATION, INDUSTRIAL; FINANCIAL REVIEW; UNITED STATES AND THE WAR.

RAINBOW DIVISION. See MILITARY PROGRESS.

RAINFALL. See METEOROLOGY.

RAPID TRANSIT. NEW YORK. During the year 1917 work progressed actively on the construction of the new subway lines in the City of New York and at the end of the year, contracts had been awarded for city-owned lines of the dual system aggregating more than $22,000,000, in addition to real estate purchases amounting to $15,000,000. Exclusive of other expenditures for real estate, the Interborough Rapid Transit Company and the New York Municipal Railway Corporation, the two operating companies of the dual system, had closed or were shortly to enter into contracts of construction of company-owned lines and equipment on both city-owned and company-owned lines, involving a total of almost $2,000,000 in addition. The heaviest construction on the New York subways was accomplished in 1916, so that the actual work in 1917 involved a reduction in the numbers of the working forces and of the contracts. It was estimated that about 11,000 men at the end of the year were employed or about one-half the largest number at any time since the contracts had been signed.

In 1917, the new facilities open to the traveling public of New York included the Broadway subway from Flatbush Avenue Extension, Brooklyn, to Fourteenth Street, Manhattan, by way of the Canal Street subway; the Seventh Avenue subway from Times Square to Pennsylvania station; the Astoria elevated branch of the Queensboro Bridge line from the Second Avenue elevated railroad in Manhattan to a connection with the Queens line at Bridge Plaza station; operation of the Jamaica Avenue extension to the Broadway elevated line, in Brooklyn, from Cypress Hills to Richmond Hill; White Plains Road extension of the first subway to 219th Street and later to 238th Street; Jerome Avenue branch of the Lexington Avenue subway from a connection with the first subway at 149th Street to Kingsbridge road; extension of the New Utrecht Avenue (West End Line) service from 25th Avenue to Coney Island, Brooklyn; rebuilt operation of Brighton Beach line from Sheepshead Bay to Coney Island; Bergen Avenue connection between first subway and Second and Third Avenue elevated lines. At the end of the year, the Broadway subway in Manhattan from Rector Street to Forty-second Street was practically completed, while the west side elevated lines were to be extended and a connection made to the Sedgwick Avenue branch at 162nd Street. The lines completed in 1917 and those to be placed in service early in 1918 aggregated eighty-two track miles, while there had been previously placed in service new lines of the dual system, enough to make a total of 174 track miles. In other words, there were 345 track miles of new lines and 296 track miles of old lines in the dual system, or a grand total of 641 track miles in operation practically completed at the end of 1917, and an estimated total of 304 track miles of new lines were to be in operation by the end of 1918, or 88 per cent of the total track mileage of the system as projected. Among notable features of construction of the year was the connection of the Lexington Avenue with the original subway at Forty-second Street, and also the two-track tunnel from Old Slip Manhattan to Clark Street, Brooklyn, connecting the Park Place, Beekman, and William Street branch of the Seventh Avenue subway with the first subway at Borough Hall and thence through Fulton Street. The Montague Street tunnel, which was one of the two connections between the Fourth Avenue subway, Brooklyn, and the Broadway subway in Manhattan, was nearing completion. Various stations were built or were well advanced, including a large terminal at Coney Island. The original estimate of an outlay of $300,000,000 for the dual system was likely to be exceeded by $50,000,000 or more.

PHILADELPHIA. During the year construction was active on the Philadelphia subway, and a novel feature was the construction of a station beneath the massive City Hall. The foundation walls of this structure were being flanked with pairs of steel or concrete girders carrying the ends of needles passing through the walls and transferring the weight of the building permanently to the new subway structure itself. These girders and the rebuilt basement floor of the City Hall were to form the roof of the subway station. This new underpinning process was a work of exceeding difficulty and involved the excavation alongside of the old rubble-masonry footing walls, and replacing them where necessary with concrete or brick work. This section of the subway also involved the construction of crossings beneath the present Market Street subway on both sides of the street by building new subway walls in sections, replacing the floor of the old subway with the roof of the new and completing the work in the same way as under the City Hall proper.

An important operating partnership between the city of Philadelphia and the Philadelphia Rapid Transit Company was agreed upon towards the end of the year for formal enactment in 1918, and was remarkable for the existence of community of interest between the municipality and the operating company. This new agreement was to embrace all existing street car and other transit lines, and the new lines which the city was constructing, the aim being that all existing traffic facilities should be mobilized immediately for efficient lowest-fare operation, and with the completion of the Frankford elevated railway, a rapid transit system would be developed by combination with the old Market Street line. The new arrangement sought to settle the various differences and to assure to the investors 5 per cent returns on the capital. There was to be a supervisory board of engineers, and it was believed that a most efficient working plan for municipal transportation was being secured.

CHICAGO. In connection with the improvement at the new Union Station owned by the Pennsylvania Company, an important construction was involved in raising the grade and changing the structure of the Metropolitan elevated line where it crosses the site of the new station. This was a four-track line carrying very heavy traffic and with the exception of closing one track at a time for short periods, the work was done without interference with the normal traffic. The work involved raising the elevated line about three feet at Canal Street, and east of this two truss spans were raised so as to give a change of grade from the old elevation at the river to the new elevation at Canal Street. West of this span, the girder structure including the elevated railway structure was raised to give a grade of 404 feet from the old elevation at Clinton Street to the new elevation at Canal Street.

The Board of Local Improvements in Chicago during the year suggested the building of underground streets, thus making the proposed rapid transit subways unnecessary. The work would be paid for partly by special assessments and partly by drawing upon the city's traction fund for such appropriations of the fund as would represent special public benefit. The subway streets would extend between the property lines, and the selection of those to be built would be left until after a public hearing.

PITTSBURGH. In Pittsburgh, a report made by E. K. Morse, the city transit commissioner, to the Municipal Council, advocated the consideration of two rapid transit lines. The first was to connect the South Hills district with the East End, extending from the South End of the present Mt. Washington tunnel across the Monongahela River, at Smithfield Street, along Water Street, Grant Street, and Frankstown Avenue, to Dallas Avenue, a distance of 7.23 miles, and largely elevated, at an estimated cost of $7,000,000. The second project was a line connecting the North End with Schenley Park and was by way of West Diamond Street, Dasher Street, and the bridge over the Allegheny River, Stanwix Street, Diamond Street, Forbes Street, and Fifth Avenue, being mostly in subway and tunnel, and naturally costing considerably more. The construction of this second line was postponed for consideration until a later date.

RAT-BITE FEVER. New light has been thrown on the character of this infection by the Japanese pathologist Futaki and his associates, who fortify their belief that the fever is due to a protozoan—a spirochete. Five more cases have been studied and the spirochetes have been found in the local eruption of the skin and in the swollen lymph nodes and the blood The Japanese investigators proposed the name *Spirochaeta morsusmuris* for what they consider the specific organism. In harmony with the spirochetal theory is the fact that salvarsan, which is well known to have a curative effect in all spirochete infections, has also a marked effect in rat-bite fever. This spirochete is not present in the blood of all rats, but can be detected in about 3 per cent of house rats in Japan.

RATIONING. See FOOD CONTROL.

RECEIVERSHIPS. See RAILWAYS.

RECLAMATION. By the strengthening and deepening of the channel of the Kankakee River in Indiana for twenty-eight miles, it was estimated at a cost of about $310,000, there would be reclaimed a large area of swamp or other land which would be valuable for truck and general farming. The strengthening and deepening of the river was to form a channel of a bottom width of 70 feet for 16 miles and 100 feet for the last 12 miles, with an average depth of 10 miles. The banks were to have a slope of 1.1 and the grade of 0.02 per cent, which afforded a velocity of about 3 feet per second. while the capacity of the channel was to be about 2400 feet per second at the upper end and 3370 per second at the lower end. The channel was to be crossed by four railways and five public highways with plate-girder bridges 120 feet long on concrete piers and abutments. The work was being done by dipper-dredges. three machines of this kind, varying from 3½ yards to 1½ yards capacity, being employed. See DRAINAGE; IRRIGATION.

RED CROSS, AMERICAN NATIONAL. The activities of the American National Red Cross during 1917 were carried on by a more compact organization and on a far greater scale than ever before. The coming of the United States into the war, as one of the Entente Allies. required an increased concentration of all the forces of administration and relief, and the placing of the entire work upon a war basis. A Central Committee was formed, of which Ex-President William Howard Taft was made chairman. Part of the committee was appointed by the president of the United States, part was elected by the Board of Incorporators, and part was elected by the delegates. The Central Committee elected an Excutive Council. The most important change, however, was the appointment of a War Council of the Red Cross by President Wilson. Of the War Council, Henry P. Davison, of the firm of J. P. Morgan and Co., was made chairman. The other members were Charles D. Norton, Cornelius N. Bliss, Jr. Major Grayson Murphy, Edward N. Hurley, William Howard Taft, and Elliot Wadsworth. Mr. Hurley afterward resigned and John D. Ryan was appointed in his place.

The result of the reorganization was to broaden the scope of the American National Red Cross so as to include the United States and the Allies. The Red Cross War Council during its activities in 1917 proceeded upon clearly marked lines. Its aim, broadly speaking, was threefold: to be ready to care for American soldiers and sailors on duty wherever and whenever that care might be needed; to shorten the war by strengthening the morale of the Allied peoples and their armies by aiding them in every possible way until the American army becomes fully effective; and to lay foundations for an enduring peace by giving practical relief to the civilian population among the Allies of the United States. The last mentioned aim has been diligently pursued, and constitutes the outstanding activities of the Red Cross in this war. Particularly impressive is the magnitude of the relief work in France.

The report of the War Council summarizes the work of the American National Red Cross from May 10, 1917, the date of the appointment of the council by President Wilson, until November 1, 1917. The War Council's report has two main divisions, the work in America and the work in Europe. Under the former heading are found reports on the following subdivisions: The war fund; the national organization; Red Cross salaries; chapters and members; the coordination of relief work; work for the American army and navy; civilians; and women's work. Under the latter heading, the leading features are: Red Cross activities in France, including military and civilian relief; and the relief afforded Belgium, England, Italy, Russia, Rumania, Serbia, Armenia, and the care of American prisoners in Germany.

Immediately after the organization of the council, a National War Finance Committee, headed by Cleveland H. Dodge, of New York, was appointed by President Wilson to undertake a financial campaign to raise the $100,000,000 asked of the American people, the amount being carefully apportioned among the States, cities, and towns throughout the country. More than $100,000,000 was soon pledged, and at the date of issue of the War Council's report, approximately $85,000,000 in cash had been collected for the war fund, of which $40,000,000 had been appropriated, the greater part for expenditure prior to January 1, 1918. During May 10-November 1, 1917, $3,310,216 had been appropriated from the war fund to Red Cross work in the United States; $7,659,000 was advanced from the same fund for the purpose of materials for use by the chapters, which amount was to be returned to the war fund; $20,601,240 was appropriated for use in France; and $7,284,576 was for use in other countries abroad.

According to official statistics received from the Red Cross headquarters considerably later than the date of issue of the War Council's report, the following is a statement of the appropriations made for relief work since the United States entered the war, and covering the budgets of the commissions abroad to April 20, 1918: *For Relief Work in Foreign Countries*, $44,588,995, of which the sum of $30,519,259 was for relief work in France; $1,999,631 for Belgium; $751,940 for Russia; $2,817,398 for Rumania; $3,146,016 for Italy; $871,180 for Serbia; $1,703,642 for Great Britain; $2,536,300 for other foreign countries; $343,627 for care of prisoners, etc.; *For Work in the United States*, $2,612,532, of which the sum of $54,000 was for army base hospitals; $32,000 for navy base hospitals; $503,000 for medical and hospital work; $364,500 for sanitary service; $996,715 for camp service; $662.317 for miscellaneous work; *For Supplies Bought in the United States*, and additional to the appropriations included under the heading, "For Relief Work in Foreign Countries," $24,323,181, of which the sum of $7,063,649 for supplies for shipment to France: $1,497,964 for supplies for shipment to Italy; $41,137 for supplies for shipment to Great Britain; $4,432,014 for supplies for distribution in the United States and abroad; $11,288,417 for supplies for resale to chapters.

The membership roll, which was over 5,000,000 at the date of issue of the report of the War Council, was increased by the Christmas membership drive to approximately 22,000,000. A movement was also inaugurated among the school children of the country to induce them to join a junior branch of the Red Cross. Quick relief was given after the Halifax disaster (q.v.) of December 6, 1917. Special trains carrying doctors and nurses, food and clothing, medical and other supplies, were rushed from Boston and New York, and other supplies were sent by boat. Money was cabled to a committee of Red Cross representatives in Guatemala for immediate relief of the loss and suffering caused by the earthquake, and a few days later a shipload of medical and other supplies was sent to Guatemala from New Orleans.

The officers of the American National Red Cross in 1917 were as follows: President, Woodrow Wilson; vice-president, Robert W. de Forest; treasurer, John Skelton Williams; counselor, John W. Davis; secretary-general, F. W. M. Cutcheon; general manager, Harvey D. Gibson; comptroller, Charles C. DuBois.

See RELIEF FOR WAR VICTIMS; UNITED STATES AND THE WAR; WAR OF THE NATIONS.

REED, ALLEN VISSCHER. An American naval officer, died in Washington, D. C., January 14, 1917. He was born at Oak Hill, N. Y., in 1838, and in 1858 graduated from the United States Naval Academy at the head of a class that included Admiral Dewey. He was promoted through the various grades to captain in 1884 and was retired in 1896 at his own request. Ten years later he was advanced to the rank of rear admiral, retired. During the first three years of the Civil War he served on various vessels assigned to blockading duty in the Gulf of Mexico, and later, while with the North Atlantic Blockading Squadron, he participated in the attacks on Fort Fisher and in other operations. Subsequently at different times he was in command of the *Kansas*, the *Alliance* (engaged in the Nicaragua Canal survey), the training ship *Minnesota*, the flagship *Richmond* of the South Atlantic Station, and of the Pensacola and Portsmouth navy yards. For five years (1875-80) he was assistant hydrographer of the United States Hydrographic Office. When commanding the *Kansas* in 1873, Rear Admiral Reed acted as convoy to the *Virginius*, a vessel flying the American flag, when she was threatened by the Spanish steamer *Bazan*. It later appeared that the *Virginius* was engaged in carrying arms to Cuban insurgents. Her final capture and the execution of her crew gave rise to a case that is famous in international law.

REED COLLEGE. A non-sectarian co-educational institution at Portland, Ore. In the fall of 1917 there were 240 students and 20 members of the faculty. Volumes in the library numbered 14,000. President, William Trufant Foster, LL.D.

REFORMED CHURCH IN AMERICA (DUTCH REFORMED). The denomination in 1917 had 132,172 communicants, an increase of 1229 over 1916; 731 churches, an increase of seven over 1916; and 759 ministers, an increase of fourteen over 1916. For administrative purposes the denomination is divided into four particular synods and thirty-five classes corresponding to the presbyteries in the Presbyterian Church. In 1917 there were 800 Sunday schools, with an enrollment of 132,748. The denomination contributed in 1917 for benevolent and missionary purposes and other benevolent objects, $692,644; and for congregational purposes, $1,830,883. The missionary work is in charge of the board of foreign missions, the women's foreign mission board, and the domestic missionary board. The board of education and board of publication regulate educational and publishing interests. The General Synod of 1917 was held at Asbury Park, N. J. Rev. Dr. J. P. Searle was elected president and Rev. Dr. J. Addison Jones, vice-president. The General Synod of 1918 meets at Asbury Park.

REFORMED CHURCH IN THE UNITED STATES, known also as the GERMAN REFORMED CHURCH. This denomination had on January 1, 1917, 326,112 communicants, 1773 churches, and 1245 ministers. The Sunday schools in 1917 had over 318,500 pupils. For administrative purposes there are 9 district synods and 61 classes. The missions of the church are carried on in almost all of the United States and in Canada. Theological seminaries are maintained at Lancaster, Pa., and Dayton, Ohio. The colleges include Franklin and Marshall College, Lancaster, Pa.; Heidelberg College, Tiffin, Ohio; Ursinus, Collegeville, Pa.; Mission House, Sheboygan, Wis.; and Catawba College, Newton, N. C. Colleges for women are maintained at Frederick, Md., and Allentown, Pa. The headquarters of the publication and Sunday school and mission boards are in Philadelphia, Pa.

REFORMED EPISCOPAL CHURCH. The administrative affairs of this denomination are under the control of six bishops. Foreign missions are carried on in India, and among the colored people of South Carolina domestic missions are maintained. There is a theological seminary in Philadelphia, where the denominational organ, the *Episcopal Recorder* is published. In 1917 the denomination had 82 ministers, 80 churches, and 11,465 communicants.

REFORMED PRESBYTERIANS. There are five branches included under this title: the Associated Reformed, South; the Reformed (Synod); the Reformed (General Synod); the Reformed (Covenated); and the Reformed in the United States and Canada. The Associate Reformed, South, is the largest branch. In 1917 it had 112 ministers, 156 churches, and 14,282 communicants. The Reformed (Synod) had 128 ministers, 113 churches, and 8481 communicants. The Reformed (General Synod) had 16 ministers, 17 churches, and 3300 communicants. The Reformed (Covenated) had 1 church and 40 communicants. The Reformed in the United States and Canada had 1 minister, 1 church, and 325 communicants. The Reformed (General Synod) maintains two churches in India, and a theological seminary in Ohio, and a college at Cedarville, Ohio.

REFORESTING. See WATER WORKS AND WATER PURIFICATION.

REFRIGERATION. In the field of refrigerating machinery, the most significant development during the year 1917 was the extended use of high-speed compressors in most of the specifications for new machines ordered or supplied. The electric drive was also increasingly used particularly for compressors employed in ice-making. A notable refrigerating plant completed during the year was that of the Merchant's Refrigerating Company of New York. In this, synchronous motors of special design with an efficiency of from 90 to 94 per cent and York three-cylinder, single-acting piston-valve compressors were used. There were four units in the installation, namely, one of fifty tons, operating at 234 revolutions per minute, a 100-ton and two 200-ton units, the three latter running at 209 revolutions per minute. The plant operated at three pounds' back pressure and 155 pounds' condenser pressure. The general process of operation was for two cylinders of each machine to take in low pressure gas and the other cylinder to boost it to the condenser pressure. After leaving the receivers, the liquid was to pass to a double-pipe cooler and be cooled to 1 degree F. of the initial water temperature. It would then pass to accumulators and the temperature would be reduced to the boiling point of intermediate ammonia pressure. A booster compressor of new and interesting type was installed in the Ninth Street Terminal, Chicago, while a low temperature compression system of a new design was placed at the plants of the Consumers Ice Company, Chicago. The number of accidents and the desire for standard practice led the Municipal Regulations Committee of the American Society of Refrigerating Engineers to formulate a safety code for refrigerating plants and it was expected that by the end of 1918, a finished code would be submitted to the society. In the city of Troy, N. Y., a safety code is in force which was prepared with the assistance of this committee. See HORTICULTURE.

REFUSE. See GARBAGE AND REFUSE DISPOSAL.

REINDEER. See ALASKA; and ANTHROPOLOGY.

RELIEF FOR WAR VICTIMS. Very shortly after the outbreak of the European war various organizations sprang into existence in the United States having for their purpose the relief of different classes of persons more or less innocent victims of the war. The ravages of the German forces in Belgium excited both the indignation and the sympathy of millions of persons who at once saw the necessity from an international point of view of saving the remnant of the Belgian nation. Likewise the devastation of Poland, Galicia, Serbia, Armenia, and Syria made an especial appeal to former citizens of those countries and their friends in the United States. By far the most important of these relief organizations was the Commission for Relief in Belgium (see below), but the Rockefeller Foundation (see ROCKEFELLER PHILANTHROPIC BOARDS) extended its relief activities over a wider range of persons and territory. The activities of the Red Cross (q.v.) the world's most important and extensive agency for the alleviation of war suffering are described elsewhere. Neither is there included here an extended statement of the civilian relief work of the Red Cross or of numerous other organizations in the United States, Canada, England, France, and other Allied nations. This civilian relief, for which the Red Cross organized extensive activities in 1917, largely in coöperation with local charity organizations, was made necessary by the drafting of men to the colors. This meant that even in the United States, where an effort was made to restrict the recruiting of married men, that many families were placed under the necessity of receiving public aid because the chief wage-earner of the family had joined the military forces. There were many cases of desertion for this purpose, and many other cases where husbands and fathers after recruiting neglected their families. Moreover, there were numerous nationals of England, France, Italy, Belgium, and Servia in the United States for whom relief was being provided by their own governments, husbands having left America to join their respective colors. Such relief was distributed through ambassadors, ministers, and consuls in coöperation with local philanthropic and social bodies.

Still another important line of relief work necessitated by the war, but which for lack of space cannot be extensively described here, were the plans developed in Canada, England, and France for the rehabilitation of injured soldiers and sailors. In all of these countries, as no doubt also in Italy and the Central Powers, plans were elaborated both by governmental and private agencies for the cure or treatment and the reëducation for economic efficiency of the injured. The vast importance of this came to be more and more clearly recognized as the number of disabled soldiers increased from a few thousands to many hundreds of thousands. In solving this problem there were necessarily brought into existence not only hospitals and other means of curative treatment, and equipment for the numerous kinds of industrial training for the blind, the deaf, and those who had lost fingers, hands, arms, legs, or other bodily parts, but also various plans of pensioning and insuring soldiers and sailors and otherwise providing whole or partial support to meet the deficit of reduced earning capacity (see INSURANCE; and WORKMEN'S COMPENSATION). So immense were these problems that they transcended the scope and power of private philanthropy and required the most careful attention of the national governments themselves.

COMMISSION FOR RELIEF IN BELGIUM. By far the most important relief organization designed to care for civilians rendered homeless or destitute within war areas was this commission which was organized on October 22, 1914, by the American and Spanish Ambassadors at London, the American and Spanish ministers at Brussels, the American Ambassador at Berlin, and the American minister at The Hague. Its headquarters were in London at No. 3 London Wall Buildings, E. C., and its other principal offices at New York, Buenos Ayres, Brussels, Rotterdam, and Pàris, but there were national organizations also in Spain, Italy, China, Japan, and elsewhere. There was affiliated with it a woman's section which did great service in making and collecting numerous kinds of food and clothing. It carried out its distribution of supplies in Belgium through the Comité National de Secours et d'Alimentation. It had extended its activities to Northern France in 1915 where it worked through the Comité d'Alimentation du Nord de la France. Its headquarters in the United States were at 165 Broadway, but it had assembling depots in every State in the Union and in every principal city and port of the world. The commission itself supplied free transportation through vessels owned or chartered by it, special protection for its vessels having been accorded by the belligerent powers. The entire personnel of the commission was American, until the entrance of the United States into the war; thereafter, although Mr. Herbert C. Hoover continued as chairman, the principal direction of affairs in Belgium and France was taken over by Spanish and Dutch citizens appointed by their governments and known as the Committee of Protection. Mr. William L. Honnold was the American director.

There were three main departments in the commission's organization: Provisioning: financial relief, exchange, and accounts; and benevolent. The function of the Provisioning Department was to feed the 7,000,000 in the devastated areas of France and Belgium, of whom 2,000,000 were wholly dependent on the commission. Most of its food was purchased in the United States but large supplies came also from Argentina: after reaching Rotterdam foods were distributed first to terminal warehouses and then to nearly 5000 communal warehouses. The actual distribution of food was carried out through local authorities, which were organized first into some 2500 communal committees. These were grouped into 126 "regional," ten "provincial," and the two "national" committees above mentioned. The Accounting Department assisted not only in keeping the financial records of the commission, but also in transferring funds from friends outside of Belgium to people within. The Benevolent Department undertook the relief of wholly or partially destitute persons. These comprised nearly one-half of the entire population and included about 1,600,000 destitute children in Belgium alone. The receipts of the Provisioning Department were used in part to finance the activities of the Benevolent Department, while immense sums were provided directly by the Belgian, French, and English governments. There were special committees in this department for children, farmers, lace-workers, refugees, artists, doctors, and pharmacists, dispossessed Belgian prisoners of war, war cripples, the tubercular, destitute young mothers, Cardinal Mercier's clergymen's fund, and a score of similar purposes. Altogether in all departments there were over 7000 local committees. Through the commission also were paid subsidies to families who had lost their bread-winners, to the families of officers, to loan societies, to educational institutions, to saving banks, and to communal governments. The commission also sought to combat the ravages of tuberculosis and other diseases due largely to the reduced vitality of the half-starved population.

Upon the breaking off of diplomatic relations between the United States and Germany in February the commission ordered all its vessels to remain in port until further notice. Nevertheless, German submarines attacked and sank two of its ships which were then in or approaching the war zone and could not be recalled. On February 12 Germany ordered all Americans to leave the occupied territory in Belgium and France and for some days the commission contemplated complete withdrawal. On February 15, after a conference of the German Civil Governor of Brussels, the American and Spanish ministers, and representatives of the commission and the Belgian National Committee, the German authorities gave permission for the work to continue. On February 24 it was announced that a route for the C. B. R. ships through the German submarines to Rotterdam had been agreed upon. Meanwhile many of these ships which had collected in British ports were unloaded and their cargoes stored awaiting reliable guarantees of safe conduct.

It was estimated that the total requirements for the commission in 1917 approached $19,-000,000 per month. Up to June 1, 1917, the commission had spent nearly $300,000,000. This was provided mainly by the French and British governments, on behalf of the Belgian government and nearly all of the remainder had come from Belgian and French citizens. Contributions had, however, come from nearly every nook and corner of the globe, including remote towns in China, Madagascar, Solomon Islands, Greenland, Liberia, and Tasmania. The latter led the world in per capita contributions with $6.53. The United States came near the bottom of the list in per capita contributions with only 9 cents per capita or a total of $9,000,000 up to the close of 1916. About 60 per cent of the entire expenditures of the commission were spent in the United States for food and other supplies giving Americans an estimated profit of $30,000,000. In the early part of the year Mr. Hoover sought to impress upon Americans the idea that the moral grandeur of which they boasted and with which they were credited in Belgium and France would disappear unless they gave some real financial support to this relief work. One response to this appeal was the appropriation by the Rocky Mountain Club of its building fund of $500,000 to the commission's work. Of the requirements for the first half of 1917 the Allied governments and French citizens pledged $14,000,000 monthly. In 1915 the English Government pledged an advance of $2,500,000 per month and the French government an equal amount on behalf of the Belgian government. These advances were afterwards increased by 50 per cent owing to higher prices and greater demands. In addition, organizations in France raised $5,000,000 per month for relief of devastated French territory, and this was afterwards increased to nearly $7,000,000 per month. Of the receipts up to June, 1917, the British Government had supplied $89,500,000 and the French government $66,000,000 for relief in Belgium. From the French for relief of Northern France had come $108,000,000. The world's charity amounted to over $30,000,000: from the British Empire, $16,000,000; United States, $11,500,000; rest of the world, $3,000,000. In June the government of the United States assumed financial responsibility by means of loans of $7,500,000 to Belgium and $5,000,000 to France.

VARIETY AND IRRESPONSIBILITY. There was a vast array of relief organizations making their appeals in all principal cities. The Bureau of Advice and Information of the New York Charity Organization Society investigated and approved as worthy over eighty relief organizations operating in that city. Most of these aimed to supply prime necessities such as food, clothing, and medical supplies, and to care for babies and children, leaving the problems of rehabilitation to be dealt with by governmental agencies. Many of these organizations advertised that funds secured by them were devoted wholly or almost wholly to relief work. The investigation showed, however, that administrative expenses amounted to nearly 15 per cent of receipts, these expenses being paid by special contributions from wealthy patrons. The great numbers of these bodies and the diverse nature of their interests prevented the proper degree of coöperation as well as a full degree of public responsibility. Financial responsibility was difficult to secure and was not approached in many cases. There were throughout the country hundreds of entertainments, concerts, and bazaars, the receipts of which were divided between the management and relief funds. The basis of division was frequently unknown to the public and accounting frequently inadequate. Several fake chain letters were brought to public attention. In November Mr. Charles N. Johnson, secretary of the New York State Board of Charities, declared that irresponsible and mismanaged war relief organizations deprived soldiers and civilians of millions of dollars contributed for relief work.

One of the best examples of efficient coöperation was that secured by the Emergency Aid of Pennsylvania. Its membership, spread throughout the State, included a federation of three types of activities: (1) committees raising money for special nationalities; (2) representatives of analogous organizations; (3) persons and organizations interested primarily in home relief. During the year the realization that many relief solicitations were false or irresponsible led one city after another to insist upon coöperation, financial responsibility, and authorization by some such public body as a chamber of commerce or charity organization society.

THE FEDERAL COUNCIL OF ALLIED WAR CHARITIES comprised some seventy-five organizations of varied interest and national in scope. It was created as a part of the movement to coördinate activities, decrease duplication, and increase financial responsibility and efficiency. It served also as a medium for effecting concerted action of its constituents with the Red Cross. The latter's Committee on Coöperation extended an invitation to the war relief bodies to become auxiliaries of the Red Cross and this was accomplished to some extent. The individual organizations, however, were loathe to surrender their independence either in the collection of funds or in the machinery, methods, and area of the distribution of benefits. The aggregate membership of the bodies in the Federal Council was over 2,000,000. Up to September, 1917, its members had sent a total of $3,000,000 in cash and goods for relief work in Europe since the war began.

THE AMERICAN AMBULANCE was one of the most important American relief activities. It organized ambulance sections for work in different parts of France, and Italy, and at Saloniki. Ambulance drivers were secured primarily from American colleges, considerably more than 1000 such men having been recruited by the middle of 1917. The American Ambulance Field Service had in July, 1917, eighteen sections of ambulances serving the French army with staffs totaling 700 volunteers. In all it was maintaining more than 700 ambulances at the front, in reserve, or under construction. A branch of this service, ammunition transport, had nearly 80,000 auto-trucks at work. This latter branch was long handicapped for lack of capable drivers, but by mid-summer this was overcome, three reserve groups of forty men each being under training. The American Ambulance Hospital at Paris was at first run entirely by voluntary workers; it was afterwards turned over to the Red Cross. It then became the American Military Hospital, run by American money, with its staff drawn from various countries, partly volunteer and partly paid professional physicians and surgeons. It had 600 beds, excellent surgical equipment, 250 motor ambulances, a hospital train fitted to accommodate 264 wounded and having operating room, sterilizing plant, diet kitchen, and a staff of doctors, surgeons, and nurses. Another feature was the Mobile Field Hospital with 108 beds; and still another the Advanced Hospital near the front at Juilly-sur-Marne. It organized the War Relief Clearing House for France and her Allies with its American headquarters in New York and its Paris headquarters in the house of the former ambassadors of the United States to France. This body was officially recognized by the French government as the agency for the distribution of American charity in France. It was given free transportation by the French government for all of its supplies on French liners and over all French railways.

American Poets, Artists, and Musicians extended aid to their colleagues and war victims throughout Europe. The American Poets' Ambulances in Italy, Robert Underwood Johnson, chairman, 70 Fifth Avenue, New York City, completed on December 15 a campaign to provide 100 ambulances. At the request of Italian authorities they also furnished five barrack hospitals and thirty-two tent hospitals. The Appui Aux Artistes maintained a canteen in Paris where needy artists could secure food at very low cost; and the Beaux-arts Comité Americain supported an information bureau for artists. The American Students' Committee of l'Ecole des Beaux-Arts for the immediate relief of art students in Paris and their families had collected $40,170 by the close of 1917; its treasurer was Henry R. Sedgwick, 607 East Thirty-seventh Street, New York City.

The American Fund for French Wounded maintained fifteen motor cars and a well stocked depot at Paris. It distributed supplies by motor to hospitals throughout France, according to the reports of its field agents. Its cars were driven by girls from all parts of the United States. Its Paris depot was formerly the theatre Alcazar d'Eté. Their distributing centres were established at Nice, Noyon, Pauchambey, and in Brittany.

Jewish Relief. Jewish refugees and war victims constituted one of the most difficult problems of war relief. It was estimated that there were nearly 5,000,000 Jewish people scattered throughout Poland, Russia, southeastern Europe, Syria, Palestine, and Egypt, who had experienced undue hardships from the war conditions. In 1916 vigorous efforts were made in this country to raise funds for their relief, the organizations principally concerned being the American Jewish Relief Committee for Sufferers from the War, Louis D. Marshall, president, the Central Committee for the Relief of Jews Suffering Through the War, the People's Relief Committee, Meyer London, chairman, and the Joint Distribution Committee of American Funds for Jewish War Sufferers. The latter served as a clearing-house, secured the necessary coöperation of governments, pooled information regarding needs, and made appropriations. The total expenditures of these organizations to the close of 1917 approximated $12,000,000. In 1916 was begun an effort to raise $10,000,000 by the close of 1917, one-half in New York City and the remainder throughout the country. Mr. Jacob Billikopf was in charge of the national campaign. Active support was secured from President Wilson, Secretary of War Baker, and many others. Mr. Julius Rosenwald, of the firm of Sears, Roebuck, and Company gave $1,000,000; eight men pledged 10 per cent of what their respective States would raise and 52 men and women pledged 10 per cent of what their respective cities would give. These eight men were: Governor Simon Bamberger of Utah; Governor Moses Alexander of Idaho; S. R. Travis of Oklahoma; William Topkis of Delaware; Jacob Epstein of Maryland; Ben Selling of Oregon; Adolph S. Ochs of Tennessee; and E. M. Chase of New Hampshire. By the close of the year $6,500,000 had been pledged outside of New York and something over $5,000,000 in that city. Appropriations were made for food, clothing, medical supplies, hospital treatment, and other care of Jews throughout the world. Up to September 15 the principal appropriations by the Joint Distribution Committee had been as follows: Russia, $2,582,300; Poland and Lithuania, $2,821,200; Austria-Hungary (one-half to Galicia), $1,583,700; Palestine, $958,674; Turkey (outside Palestine), $318,650; Alexandria, $42,300; Greece, $34,000; Serbia, $19,500; Rumania, $75,900; Bulgaria, $18,500; Tunis, Algiers, and Morocco, $9000. In addition, the American Jewish Relief Committee and the central committee had sent more than $1,000,000 independently. The Transmission Bureau of the American Committee had conveyed $500,000 from persons in America to relatives abroad. The Joint Committee had also made appropriations for Swiss University students and writers ($7000), for destitute families of Russian Jews in France ($5000), and for Turkish refugees in Spain ($8000). For the work abroad the principal agencies were Jewish Colonization Association in Russia, the Jewish Relief Committee for Poland, the Israelitische Allianz of Vienna. The Russian organization includes the Central Jewish Committee for the Relief of Sufferers in the war with headquarters at Petrograd, territorial committees at Moscow, Kharkov, Kiev, and Odessa, and more than 125 local committees. There are also special committees on Health, Agriculture, and Industry and Education. Following America's entrance into the war the relief work in Poland was carried out through the Netherlands government.

Quakers in War Relief. Within a few months after the outbreak of the war Quakers of the United States and England began relief activities among peasants of devastated areas in France and Belgium. By the fall of 1917 they had erected nearly 500 wooden houses for peasants and assisted in securing supplies of agricultural implements and tools, seeds, poultry, rabbits, etc., as well as household furniture and utensils. They established work-rooms for farm women, convalescent homes, a small general hospital, and a maternity hospital. They organized industries and recreation among the thousands of Belgians in refugee camps in Holland. Later they began similar work among Russians driven from home on the eastern battle line, this branch being in charge of the American Friends' Service Committee, assisted by a group of English Friends. This committee began in July also the training at Haverford College of 100 young men for reconstruction work in France, including agriculture, horticulture, building, repairing, sanitation, medical, and social work.

Other Funds. Other important funds, together with their New York headquarters and in most cases the amounts which they had collected from their organization to the close of 1917, were the following: the Secours National Fund for the relief of French women and children, of which Mrs. Whitney Warren, 16 East Fortieth Street, was the head, had collected over $377,000. The Serbian Relief Committee of America, 70 Fifth Avenue, had collected $375,500, The British War Relief Association (Inc.), 542 Fifth Avenue, organized the fund for Rumanian

War Relief, assisted relief work and hospitals in England, sent comfort kits to British soldiers, and materially aided in the relief of Halifax sufferers in December; it had collected $131,500. The American Committee for Training in Suitable Trades the Maimed Soldiers of France, Edmund K. Baylies, the Biltmore Hotel, treasurer, had collected $350,000. The Vacation War Relief Committee, Mrs. Valentine Schuyler, chairman, 20 West Twenty-third Street, had collected more than $635,000; it had made and shipped during 1917, 31,000 garments, cut out and made 136,000 garments, sent abroad 50,000 cases of condensed milk, hundreds of talking machines, and more than 10,000 records. The Polish Victims Relief Fund, 33 West Forty-second Street, had collected over $906,000. Its University Grants Committee sought funds for the Polish professors, scientists, and scholars made destitute by the war. The Lafayette Fund, which provided comfort kits costing $2 each for soldiers fighting in France had collected over $250,200. The American Girls Aid for the Collection of Clothing for the Victims of the European War in France, Miss Gladys Hollingsworth, chairman, 293 Fifth Avenue, had collected over $114,000. The Duryea War Relief, Mrs. Nina L. Duryea, president, had headquarters at 9 East Thirtieth Street. The Trench Comfort Packets Committee for the United States and Allies, Mrs. Mary H. Williard, chairman, sent packets of towels, soap, razors, etc.; its office was at 2-14 West Thirty-ninth Street. The Stage Women's War Relief, Miss Rachael Crothers, president, 366 Fifth Avenue, sent surgical dressings, other hospital supplies, such as rubber gloves, anæsthetics, and garments; it had a department for making wind-proof jackets and departments for surgical dressings and for knitting. The Committee of Mercy, August Belmont, treasurer, receives contributions at 360 Madison Avenue. Mrs. Gertrude Atherton carried on a vigorous campaign in behalf of Le Bien Être du Blessé, 360 Madison Avenue. The New York Committee of the Fatherless Children of France, W. W. Price, 111 Broadway, treasurer, had collected over $290,700; it supported children at the rate of $36.50 each per year. The Dollar Christmas Fund for Destitute Belgian Children had collected over $43,000; most of this was sent to the Belgian Relief Committee which arranged for a special Christmas dinner for especially destitute children. The French Tuberculosis War Victims' Fund, 360 Madison Avenue, Charles H. Sabin, treasurer, had collected over $122,000. The American Committee of the Scottish Women's Hospitals for Home and Foreign Service, 20 Nassau Street, sought to assist the soldiers of the Allied armies. The National Allied Relief Committee, James A. Blair, Jr., treasurer, 360 Madison Avenue, raised $1,182,000 between July, 1915, and December 26, 1917; it benefited the sufferers of devastated France, disabled soldiers and their widows and children of Scotland, the Commission for Relief in Belgium, the French Tuberculosis War Victims' Fund, the London Motor Transport Volunteer Corps, the Balkan Refugees and Sufferers, Polish Refugees, and others. The War Babies' Cradle, Mrs. Jules S. Bache, treasurer, 360 Madison Avenue, provided nursing and food for destitute wives of French soldiers. The Polish Children's Relief Fund of the Women's League in Poland, Mrs. Herbert L. Satterlee, 37 East Thirty-sixth Street, treasurer, had collected $23,583. The American Committee for Armenian and Syrian Relief, Cleveland H. Dodge, 1 Madison Avenue, had collected about $6,900,000. The New York Surgical Dressings Committee, Mrs. Edward R. Hewitt, chairman, 19 East Fifty-ninth Street, shipped during the year nearly 880,000 surgical dressings to the Allied armies and 8540 cases of ether, besides numerous knitted garments for soldiers and sailors. The Food for French Fund, Miss Carita Spencer, chairman, had collected about $24,000; it shipped condensed milk, malted milk, chocolate, sugar, and various kinds of condensed foods; address 140 Broadway.

If any evidence further than the above list were necessary to show the great variety of relief organizations it would be found in the following list which includes most of the remaining organizations approved by the New York Charity Organization Soicety; Mutualité Maternelle de Paris; Serbian American Orphanage; Eastern Armies Relief Mission; Fund for Maimed Belgian Soldiers; Fund for Children of Northern France; French Widows' Aid; Belgian Commission for Mutilated Soldiers; American Society for Relief of French War Orphans; Permanent Blind War Relief Fund; French Heroes Lafayette Memorial Fund; Serbian Hospital Fund; French Heroes Fund; Russian War Relief Committee; Russian American International Reconstruction League; American Women's War Relief Fund; Authors' League Fund; British Sailors' and Soldiers' Tobacco Fund; Prince of Wales (National Relief) Fund; Professional Classes War Relief Council; Belgian Refugees Knitting Yarn Fund; Canadian Patriotic Fund; Committee for Men Blinded in Battle; Committee for Relief of Belgian Prisoners in Germany; Franco-American Committee for the Protection of the Children of the Frontier; Hospital Under Three Flags; Peoples' Relief Committee for the Jewish War Sufferers; Refugees Relief Fund; British-American War Relief Fund; Australian War Relief Fund; Armenian Medical Relief Association; Friends of Poland; Lithuanian Central War Relief Committee; New England Italian War Relief Fund.

RELIGION, BOOKS ON. See LITERATURE, ENGLISH AND AMERICAN.

REMEDIAL LOANS. One of the problems attacked by social workers with great vigor during the last half-dozen years is that of providing small loans to workers, clerks, and other propertyless persons to tide them over periods of stress. In the past such persons have been subject to brutal exploitation when they have become the victims of such inevitable contingencies as sickness, death in the family, unemployment, or other occasional cause of special need. At such times they were formerly and still are in many places under the necessity of resorting to private lenders, popularly known as "Loan Sharks," who were in reality unrestrained by any limitations except their own greed. Such loans are necessarily based in most cases upon a pledge of salary or wages, but also in many cases on the deposit of collateral in the form of small personal possessions of value. Rates of interest are necessarily high because of the expense involved in making such loans and in collecting them and the high risk involved.

The National Federation of Remedial Loan

Associations held its 9th annual convention at Cincinnati about June 1. This comprises over forty local societies formed to combat the loan sharks and to provide loans at moderate rates to deserving persons. In 1916 they made over 830,000 loans aggregating $29,500,000. These societies are not charitable but they limit their dividends. They have been active in promoting legislation with reference to small loans and in the formation of credit unions.

The American Association of Small Loan Brokers comprises State associations of licensed money lenders formed in Ohio, Maryland, Pennsylvania, Illinois, Michigan, New Jersey, California, Massachusetts, and various other States. They have been formed following the enactment of loans designed to drive out loan sharks. They have sought to standardize the small loan business and thus to raise the dignity of the occupation and at the same time increase benefits to borrowers.

LEGISLATION. The Division of Remedial Loans of the Russell Sage Foundation in coöperation with the foregoing association formulated a model bill which during 1916 and 1917 was introduced in many States in which approved legislation was lacking. This bill placed all lenders of $300 or less under the control of a State bank examiner; limited interest to 3½ per cent per month on unpaid balances; prohibited the charging of additional fees or bonuses; and forbade the assignment of wages except with the consent of wife. Bills relating to this matter were introduced in at least seventeen States in 1917. In most cases these were pushed by the above organizations in coöperation with State associations of small loan brokers, local remedial loan societies, and social and civic organizations. These same agencies opposed some bills which ostensibly limited interest charges to 1 per cent or 1½ per cent per month but permitted the charging of special fees, on the ground that this loophole defeated the aim of such legislation. The model law was passed in Maine, New Hampshire, Indiana, and Illinois. Laws were passed in Utah and Colorado limiting interest charges to 12 per cent a year. The model law was upheld as constitutional by the supreme courts of Ohio, Oregon, and by two lower courts in Pennsylvania.

OTHER AGENCIES. Another important development in this field is that of the Morris Plan banks, the first of which was organized at Norfolk, Va., in 1901. Their organization has been pushed by the Industrial Finance Corporation with $7,000,000 capital. These banks make loans to any person either on collateral or on a note signed by the borrower and two other persons. A charge of $1 for each $50 loaned is made to cover the cost of investigating the endorsers of the note. Loans are repaid by weekly installments. The interest rate which is normally 6 per cent as a rule in reality amounts to at least 16 per cent. Bills to legalize this plan of operation were introduced in Maine, Minnesota, New Jersey, Pennsylvania, and elsewhere in 1917, but because the plan provides for the charging of special fees such bills have not been supported by the remedial loan societies.

Credit Unions have grown rapidly in Massachusetts, New York, and certain Southern and Western States during the last few years. These unions, by pooling the resources and credit of a group of persons well known to each other, make possible the securing of funds on favorable terms even though the members individually have little or no capital. While each member is made responsible only to the extent of his own stock, character is the basis of membership and of credit. The unions put a premium on thrift and personal probity and are thus considered socially constructive. They frequently combine with lending retail coöperative activities. The laws legalizing them require the unions to issue stock in amounts ranging from $1 to $5 per share; membership may as a rule include not only individuals but firms, corporations, and societies; unions are exempt from taxation; their dividends are limited; as a rule they may receive deposits; and in most States they may engage in a variety of coöperative undertakings. More than sixty such unions have been formed in Massachusetts, and over thirty in New York. They have been authorized also in North Carolina, Oregon, Texas, Utah, and Wisconsin. The 1917 report of the Massachusetts Credit Union Association showed that it comprised sixty-three locals with 20,000 members. Each union receives deposits, makes loans to members, and sells them shares on the installment plan. See AGRICULTURAL CREDIT.

RENARD, ROSITA. See MUSIC, *Artists*, Instrumentalists.

RENSSELAER POLYTECHNIC INSTITUTE. A non-sectarian institution for the technical education of men, at Troy, N. Y. In the fall of 1917 there were 614 students and 63 members of the faculty. The institute received $215,000 in benefactions in 1917. The productive funds amounted to $1,700,000 and the income therefrom to $82,500. Volumes in the library, which contains only scientific works, numbered 23,000 in 1917—12,000 bound and 11,000 pamphlets. Plans were made for doubling the capacity of the chemical laboratory and for adding new units to the dormitory system, each unit to be a three-story house to accommodate 12 students. The institute was founded in 1824. President, Palmer C. Ricketts, LL.D.

REORGANIZATION. See RAILWAYS.

REORGANIZED CHURCH OF JESUS CHRIST OF THE LATTER DAY SAINTS. This is a separate organization of Mormons claiming to be the true successor of the church founded in 1830 by Joseph Smith. It was reorganized in 1852. Its chief offices are at Lamoni, Iowa. In 1917 it had approximately 79,000 members, 1800 ministers, 800 churches, 750 Sunday schools, and 40,000 Sunday school scholars. Its officers are: Frederick M. Smith, president; Benjamin R. McGuire, presiding bishop; Richard S. Salyards, general church secretary.

RESZKE, EDOUARD DE. A Polish opera singer, brother of Jean de Reszke, born at Warsaw in 1855. For many years he was a member of the Metropolitan Opera House in New York City. He studied under Ciaffei, Steller, Coletti, and Sbriglia. He took up music after devoting himself for some time to scientific farming on the family estate in Silesia. He made his first appearance at the Italiens in Paris in 1876. For the next quarter of a century he was famous as one of the greatest dramatic bassos of his time, appearing at the Metropolitan Opera House of New York and at Covent Garden, London. Since the outbreak of the present war, there had been reports that he was living in a state of destitution in Poland, although he was known to possess a large fortune. It was said by the Polish Relief Committee that he was forced to live in a cellar as a result of the German advance into Poland. He died c. May 30, 1917.

RHODE ISLAND. POPULATION. The population of the State in 1910 was 542,610, and on July 1, 1917, it was estimated to be 625,865.

AGRICULTURE. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	18,000	546,000	$1,289,000
	1916	11,000	341,000	471,000
Oats	1917	2,000	62,000	46,000
	1916	2,000	54,000	37,000
Potatoes	1917	5,000	675,000	1,181,000
	1916	6,000	444,000	820,000
Hay	1917	60,000	*a* 90,000	1,827,000
	1916	58,000	78,000	1,560,000

a Tons.

TRANSPORTATION. The total mileage of main track in the State in 1916 was 1972, practically all of which was operated by the New York, New Haven, and Hartford, or its subsidiary companies.

FINANCE. The report of the State treasurer for the fiscal year ending December 31, 1916, shows receipts amounting to $3,815,477, and payments amounting to $3,782,639. There was a balance on December 31, 1916, of $31,390.

EDUCATION. The total school population in 1916 was 129,985. The total enrollment was 89,879, with the average daily attendance of 71,613. The number of women teachers was 2540 and the number of men 233. The average monthly salary of women teachers was $68.14, and that of men was $142.32. The total expenditure for school purposes was $4,136,492.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the State Hospital for the Insane, House of Correction, State Almshouse, the State Prison, State Providence County Jail, Sockanosset School for Boys, and the Oaklawn School for Girls. The Rhode Island State School for the Feeble-Minded is under the State Board of Education.

POLITICS AND GOVERNMENT. Both houses of the legislature, on April 17, approved the extension of presidential suffrage to the women of the State, and Governor Beeckman, on the following day, signed the bill making it a law. Rhode Island was the first east of Ohio to give to women the right to vote for the presidential electors.

LEGISLATION. Among the more important measures passed at the legislative session of 1917 are those noted below. The laws relating to domestic relations were amended. It was provided that a person over twenty-one years of age may not unreasonably neglect to support parents who are destitute without fault of their own. The lease of prison labor to private contractors was prohibited. The laws relating to the workingman's compensation were amended. Workingmen are permitted to choose their own physician in case of injury. Educational laws were amended. The maximum school age was increased from fifteen to sixteen years.

STATE OFFICERS. Governor, R. Livingston Beeckman; Lieutenant-Governor, Emery J. San Souci; Secretary of State, J. Frederick Parker; Attorney-General, Herbert A. Rice; Treasurer, Walter A. Read; Adjutant-General, Charles W. Abbott, Jr.; Auditor, Philip H. Wilbour; Commissioner of Public Schools, Walter E. Ranger; Commissioner of Insurance, State Auditor, ex-officio—all Republicans.

JUDICIARY. Supreme Court: Chief Justice, Christopher F. Parkhurst; Associate Justices, Charles F. Stearns, W. B. Vincent, William H. Sweetland, Darius Baker; Clerk, B. S. Blaisdell.

RHODESIA. A British Protectorate north of the Transvaal under the administration of the British South Africa Company and consisting of Northern Rhodesia and Southern Rhodesia. Northern Rhodesia comprises the two former provinces of Barotseland and Northeastern Rhodesia. Its area is estimated at 291,000 square miles and its population at 877,100 of whom only 2100 are Europeans. The seat of the administration is Livingstone. The administrator in 1917 was L. A. Wallace, C.M.G. Among its exports are rubber, ivory, tobacco, and cotton. Southern Rhodesia comprises Mashonaland and Matabeleland, with an area of 149,000 square miles and a population of 777,882 of whom the Europeans number approximately 32,882. The seat of the administration is Salisbury and the administrator in 1917 was Sir F. Drummond Chaplin, K.C.M.G. The output of gold in 1916 was £3,895,311. Besides gold it exports silver, lead, copper, coal, chrome ore and asbestos. Throughout the Protectorate wide areas are cultivated and the country is well suited to stock raising.

RHONDA, Baron. A Welsh industrial peer and British food controller. He was born in Aberdare, Glanmorgan, in 1856, the son of a small mine owner, from whom he inherited two coal pits. He was privately educated as a boy and eventually went to Caius College, Cambridge, and was a scholar of Jesus and Caius. Then he returned to the coal fields and gradually opened more and more pits until he used to be called the uncrowned king of the South Wales coal field. He served as a member of Parliament, representing Merthyr Tydfill. The most striking part of Lord Rhonda's career was his participation in war work. He was chosen by Lloyd George to go to Washington and Toronto to hurry up the first British munition supplies from the States. In one of these trips he and his daughter were rescued from the *Lusitania*. As a result of his work in this field of endeavor he was made a baron, and when it became necessary to regulate England's food situation, he was picked out for the position by Lloyd George. His name before receiving his title was David A. Thomas.

RHONE CANAL. See CANALS.

RHOTANIUM. See CHEMISTRY, INDUSTRIAL, *Metals*.

RICE. The rice crop of 1917 was satisfactory in most of the world's principal producing countries. The Japanese crop was estimated at 296,883,295 bushels, or greater by 4,668,060 bushels than the preceding crop, and about 32,000,000 bushels above the annual average. The crop of India was reported as also very promising, but in Siam floods damaged an area of about 400,000 acres and caused a loss of approximately 13,000,000 bushels. The Italian yield was estimated at 25,097,800 bushels, which was about the normal production, and the Spanish crop of 11,373,000 bushels also constituted about an average yield.

According to estimates by the U. S. Department of Agriculture, the rice production of the United States in 1917 was 36,278,000 bushels as compared with 41,325,000 bushels in 1916. While the area in rice, 964,000 acres, was the largest ever sown and was greater by 95,000 acres than the acreage of the preceding year, the average yield per acre was ten bushels lower than the exceptionally high average acre yield of 47.6 bushels in 1916. The average yield per acre for the five years 1911-1915 was 33.8 bushels. The average farm value of rice on December 1, 1917, reached the record price of $1.894 per bushel, as compared with 88.7 cents on the corresponding date the year before, and on this basis the total production represented the record value of $68,717,000.

In Japan the price of rice reached $2.34 per bushel during the year, this being 4 cents above the preceding record price in 1912. In the United States in 1917, 22 per cent of the acreage was devoted to Honduras, 13 per cent to Japan, and 43 per cent to Blue Rose rice. In California 94 per cent of the acreage was devoted to Japan rice.

RICE INSTITUTE. A university of liberal and technical learning at Houston, Tex. It was founded by William Marsh Rice and dedicated by him to the advancement of letters, science, and art, was incorporated in 1891, but was not opened until 1912. In the fall of 1917 there were 651 students and 45 members of the faculty, in addition to 6 fellows and 44 student assistants. Productive funds in 1917 amounted to approximately $10,000,000 and the income to $500,000. President, Edgar Adell Lovett, LL.D.

RIGA. See LIVONIA.

RIGGS' DISEASE. The reports of investigations of this disease during 1917 have been chiefly notable for their utter rejection of the theory of Bass and Johns, that the *Entameba buccalis* is the specific causative factor in its production, that emetin is a specific against it, and that the disease was present in 95 per cent of our population. A great variety of organisms have been found in the pus pockets about diseased teeth, but it is at the present time impossible to ascribe etiological significance to any particular germ. Staphylococci and streptococci are practically always present, and systemic infections, upon which so much stress has been laid of late, seem to be due to the absorption of the *Streptococcus viridans* and strains of hemolytic streptococci, rather than to other types. The consensus of opinion is that pyorrhea is due in no small degree to local infection, yet that malnutrition, lack of vital resistance, and local irritation are also very potent agencies.

RIVERS AND HARBORS. See CANALS; DOCKS AND HARBORS; INLAND WATERWAYS.

RIVERSIDEITE. See MINERALOGY.

ROADS AND PAVEMENTS. The need of carefully devised programmes for road construction and maintenance during the war became more and more apparent as the year progressed. Railway congestion forced motor trucks into use as never before. Some of these operated on regular schedules over long routes, extending in some cases from points in the Middle West to the seaboard (see AUTOMOBILES). The weight of these motor trucks combined with the heavy traffic of motor vehicles of all kinds demanded road surfacing material of high quality placed upon solid, well-drained foundations. With the increasing number and weight of motor vehicles on country highways road construction assumed more and more the character of city pavements. Consequently brick and various kinds of bituminous concrete on good foundations of Portland cement concrete were becoming increasingly common on country highways and many long stretches of cement concrete pavement were being placed. Except in point of adaptation of the various types of road surfacing and pavement to changing traffic and to the war exigencies affecting the availability of different materials, their cost and the cost of labor, the technique of road and pavement construction followed the same general lines in 1917 as have been sketched in earlier issues of the YEAR BOOK.

PROGRESS UNDER FEDERAL AID ROAD ACT. In an address before the American Association of State Highway Officials at Richmond, Va., in December, Logan Waller Page, director of the U. S. Office of Public Roads and Rural Engineering, stated that of 228 projects submitted for the purpose of obtaining Federal aid, 168 had been approved and only six disapproved. The total funds involved amounted to $13,583,578, of which $4,052,143 were to be contributed by the general government and $9,770,179 would come from State and local sources. The status of State aid to November 30, 1917, as reported by Mr. Page, is given in the table on the following page.

The Federal Aid Road Act was passed in 1916. Under its provision a total of $75,000,000 was appropriated, of which $5,000,000 was made available for the fiscal year 1917, the sum increasing annually by $5,000,000 for each of the following years until 1921, when $25,000,000 will be available. Each State receiving Federal aid must contribute an equal sum.

STATE HIGHWAY EXPENDITURES. Late in the year the U. S. Office of Public Roads issued statistics regarding rural roads in the various States, together with State expenditures for roads. During the year 1916 a total of 15,160 miles of roads were built by the several States alone or by States and localities under State aid. In the same year 75,311 miles of roads were maintained with State aid funds and 4490 bridges were built by the same means. Up to January 1, 1917, a total of 69,186 miles of State and State aid roads had been built. On the same date the total mileage of all public rural roads in the United States was 2,455,761. Of these, 287,047 or 11.6 per cent of the total, had improved surfaces. The percentage of surfaced roads was 47.6 in Massachusetts, 42.5 in Indiana, 40.5 in New Jersey, 36.5 in Ohio, 34.5 in Rhode Island, 23.6 in Kentucky, 22.0 in Connecticut, and 20.2 in California. From this point the percentages decreased to 1.0 in Iowa, 0.8 in South Dakota, and 0.3 in Oklahoma, which latter footed the list.

PRIORITY ORDER NO. 2. On November 1 there went into effect Priority Order No. 2 forbidding the shipment anywhere in the United States of specified materials in certain types of freight cars. This order caused the shutting down of large amounts of road surfacing and city pavement in all parts of the country, it not being possible to continue such work where the availability of material depended upon railway shipments. With the taking over of the railways of the country by the Federal government at the close of the year the effects of the order came to an end. A Highways Transport Committee of the Council of National Defense was created to take into account various matters relating to the subject indicated by the name of the committee, including routes and road materials.

FUNDS APPROPRIATED, MILEAGE, AND STATUS OF FEDERAL-AID ROAD PROJECTS—COMPLETE TO NOV. 30, 1917

State	Projects Submitted	*Projects Approved*				*To Nov. 30, 1917*	
		Number	*Federal Funds Involved*	*Total Funds Involved*	*Miles Involved*	*Project Agreements*	*Plans, Specifications, Estimates Submitted*
Alabama	28	22	$235,012.91	$482,022.22	145.86	8	15
Arizona	1	1	57,899.89	115,799.79	(bridge)	1	1
Arkansas	8	7	102,434.71	251,255.87	33.03	7	7
California	5	2	60,827.20	125,878.06	6.78	2	2
Colorado	7	5	100,982.20	215,426.88	80.53	..	1
Connecticut	2 [a]	2	78,400.00	217,969.29	7.8	1	1
Florida	2	2	32,500.00	92,220.60	14.43	..	1
Georgia	5	5	167,798.98	336,545.84	124.03	..	..
Idaho	1	1	75,000.00	190,410.00	57.0	..	..
Iowa	8	4	82,512.60	251,760.88	52.07	1	1
Kentucky	2	1	67,593.82	135,187.65	8.13	..	..
Louisiana	7	5	140,924.02	410,197.49	77.48	..	4
Maine	3 [a]	2	158,063.53	335,822.94	15.53	1	1
Maryland	4	4	93,050.21	202,436.98	9.66	3	4
Massachusetts	6	6	114,390.36	257,253.74	12.44	3	5
Michigan	7	5	293,419.75	586,839.50	83.94	1	3
Minnesota	14	13	365,840.52	753,919.36	252.01	2	5
Mississippi	7	5	85,164.28	197,211.46	77.0	..	..
Missouri	3	3	62,556.33	250,225.34	39.7	..	..
Nebraska	2	1	17,847.50	204,683.05	5.5	..	..
Nevada	4	..	....	....	....	..	..
New Hampshire	8	8	58,668.91	117,337.84	12.24	3	6
New Jersey	1	1	59,212.68	164,988.01	9.7	..	..
New Mexico	11	1	5,287.99	10,575.99	3.0	..	..
New York	5	4	227,843.55	455,687.10	22.87	..	..
North Carolina	14	12	93,500.00	286,400.87	96.12	3	3
North Dakota	2	2	13,612.50	27,225.00	32.0	..	..
Ohio	7	7	382,078.00	1,229,579.28	39.01	2	7
Oklahoma	1	1	50,029.37	100,058.75	25.0	..	..
Oregon	4	1	19,032.75	38,065.50	4.8	..	..
Pennsylvania	7	4	195,750.00	528,432.45	19.58	4	4
Rhode Island	1	1	34,997.13	85,444.16	3.66	1	1
South Carolina	5	5	134,610.37	284,229.02	27.06	..	3
Texas	6	..	....	....	....	..	..
Utah	1	1	38,700.00	77,400.00	45.0	..	..
Vermont	9	9	52,442.58	104,885.19	12.56	..	1
Virginia	4	4	57,976.39	133,053.38	19.42	3	3
Washington	7	7	215,652.72	460,843.36	39.94	2	6
West Virginia	1	1	9,246.48	30,912.29	2.53	..	1
Wisconsin	3	..	....	....	....	..	2
Wyoming	5	3	11,287.67	22,575.32	28.72	..	..
	228	168	$4,052,142.85	$9,770,179.40	1,546.12	48	88

[a] Connecticut Project No. 2 and Maine Project No. 2 withdrawn after approval.

ROCHESTER. See CITY PLANNING.

ROCHESTER, UNIVERSITY OF. A non-sectarian institution for the education of men, located at Rochester, N. Y. In the fall of 1917 there were 535 students and 53 members of the faculty; about 250 students, alumni, and members of the faculty were in government service in 1917. $673,350 was received in 1917 from the estate of L. P. Ross to found a department of vital economics. Productive funds in 1917 amounted to $2,280,000 and the income to $92,000. Volumes in the library numbered 71,749. The university was founded in 1850. President, Rush Rhees, D.D., LL.D.

ROCKEFELLER, FRANK. An American stock raiser, youngest brother of John D. Rockefeller, died in Cleveland, Ohio, April 15, 1917. He was born in 1845 at Richford, N. Y., and was early associated with his brothers in the oil-producing business, as a vice-president of the Standard Oil Company. A quarrel with his brother John ended in complete alienation many years ago, although William Rockefeller had tried to bring the two together again. Since 1900 Frank Rockefeller had devoted himself largely to a stock farm of 12,000 acres at Belvidere, Kans., a model of its kind, personally supervised by the owner. He also had an estate in Cleveland. In comparison with his brothers he was not a wealthy man, his estate being estimated at $800,000.

ROCKEFELLER FOUNDATION. See ROCKEFELLER PHILANTHROPIC BOARDS.

ROCKEFELLER INSTITUTE. See ROCKEFELLER PHILANTHROPIC BOARDS.

ROCKEFELLER PHILANTHROPIC BOARDS. The vast fortune of John D. Rockefeller has been used for the promotion of quite an array of charitable and educational activities. He has given many millions to Chicago University and numerous other institutions and organizations, but his most conspicuous donations have been to the Institute for Medical Research and the two bodies described below. The institute, founded in 1901, located in New York City, has funds and property of over $15,000,000 and an annual budget of over $500,000. Its three departments are its laboratories, its hospital, and the plant near Princeton, N. J., for the study of animal pathology. In 1917 a war demonstration hospital was built in New York City, upon the model of a recent base hospital actually in use on the Western Front. It is to be used to demonstrate to American surgeons the treatment for infected wounds, worked out by Dr. Alexis Carrel and Dr. H. D. Dakin.

ROCKEFELLER FOUNDATION. The most important of the boards and institutions founded by John D. Rockefeller is the Rockefeller Foundation chartered in 1913 "to promote the well-being of mankind throughout the world." To this Mr. Rockefeller gave securities valued at $100,000,000. Since the beginning of the war the foundation has carried on numerous activities of its own and coöperated with multifarious organizations. On account of the extraordinary demands, due to the war it was voted by the trustees in May that "in addition to the income, the principal of the funds of the foundation to the amount of $10,000,000 may be distributed from time to time." During the first six months of 1917 the total appropriations for war relief were $6,137,500. Among these appropriations for war relief were the following: for agencies connected with training camps for American soldiers, $370,000; for medical work, $402,500, including a special hospital to teach the new methods of war surgery, a mobile hospital in France for clinical instruction, and such other policies as the appropriations of serums for war relief and special research in war medicine and surgery; and for humanitarian work, $5,500,000, including an unconditional gift to the American Red Cross and considerable sums for the International Committee Y. M. C. A. foreign military work, Commission for Relief in Belgium, American Committee for Armenian and Syrian Relief, and $100,000 for the work of the International Health Board of the Foundation for tuberculosis work in France. The war demonstration hospital above mentioned was constructed in New York and directed by Dr. Alexis Carrel for the purpose of demonstrating to American surgeons new methods developed in war hospitals of France. These methods at once found wide application in treatment of industrial injuries. The work on the prevention of tuberculosis in France was under the direction of a commission headed by Dr. Livingston Farrand, president of the University of Colorado, with the assistance of Professor S. N. Ginn, of Boston, Dr. James A. Miller, of New York, and Mr. Homer Folks, of New York. When the original endowment was given Mr. Rockefeller stipulated that $2,000,000 of the annual income should be subject to specific appropriation by himself, provided the objects were within the purposes of the foundation. In July, 1917, this privilege was surrendered by the donor. This released the sum of $1,965,000 for purposes to be designated by the trustees rather than by Mr. Rockefeller himself. Among other appropriations besides war relief for the first half of 1917 were the following: The China Medical Board, $814,837; International Health Board, $951,150; for the study of Industrial Relations, $20,000; for the Rockefeller Institute for Medical Research, $2,087,156, of which $2,000,000 was for additional endowment. Besides all of these expenditures there were appropriations amounting to $960,370 for numerous religious, social, and civic organizations. In July Dr. Alden R. Hoover, medical missionary, made an extended report of investigation for the foundation into health conditions throughout Turkey.

On December 10 the Foundation announced that expenditures aggregating $5,050,000 for 1918 had already been approved for war work alone, but chiefly for the promotion of health and the advancement of medicine. In addition to appropriations for the war work of the Red Cross, Y. M. C. A., Y. W. C. A., the Jewish Camp Welfare, and the Training Camps Commission, the list included: for work against yellow fever, hookworm, malaria, etc., $1,076,000; for the tuberculosis commission in France, $424,000; for medical colleges in China, $918,000; for other medical schools and societies, $927,000.

GENERAL EDUCATION BOARD. This board was chartered by Congress in 1903. It has sought to stimulate rural education and farming, especially in the South; high school development; negro education; higher education; medical education, and educational research. For these purposes it has spent an aggregate of about $20,000,000 from its own funds, besides other millions from the foundation, and had induced colleges and universities to raise in addition about $50,000,000. The funds of the foundation including reserve were reported to exceed $34,000,000.

In January a resolution of Congress requested the secretary of the interior to furnish information regarding the relation of the Bureau of Education to the General Education Board or other private bodies. To this the commissioner replied that there was no relation of the bureau with the General Education Board or the Rockefeller Foundation, though coöperative relations for purposes of investigation did exist with several funds and organizations. On the ground that this relationship enabled private bodies to carry out inquiries under government auspices and use the franking privilege in disseminating literature largely propagandist in nature, Congress enacted that the bureau should spend no part of its funds "in connection with any money contributed by the General Education Board or by any corporation or individual other than State, county, or municipal agencies." It was charged that the General Education Board was controlling the policies of State and local boards of education and of State and sectarian colleges and universities; and that the board was impeding progressive legislation. A similar rule was made applicable by Congress to appropriations for the Agricultural Department.

In January the board announced that it would supply Teachers College of Columbia University with adequate funds "to establish and conduct a school for the purpose of constructive work in the reorganization of elementary and secondary education." It was announced that this school would be better adapted to needs of modern life, would discard the "formal discipline" theory of education, and would substitute science, industry, and the domestic arts for Latin and Greek. This purpose was the result of papers prepared for the board by ex-President Eliot and Dr. Abraham Flexner. Professor O. W. Caldwell, of the School of Education, University of Chicago, was appointed director of the new "model school." See EDUCATION.

ROCKS. See GEOLOGY.

RODIN, AUGUSTE. A French sculptor, one of the greatest of all times, born in Paris November 4, 1840, of a poor family. He died November 27, 1917. He was educated at a school conducted by his uncle, and at the age of fourteen entered a free drawing school in the Latin quarter, and later went to the school of Barye in the Jardin des Plantes. When only twenty-two years old he modeled in clay one of his most powerful and characteristic works entitled "The Broken Nose." During the Franco-Prussian War he served in the National Guard, and after the war went to Brussels, where he executed a great deal of decorative work, besides sending two busts to the Paris Salon; both were accepted and were placed on exhibition in 1875. In this year he made a short visit to Italy, after which he modeled the "Age of Bronze," a work condemned by the more conservative sculptors on account of its radical naturalism. This was later placed in the Luxembourg Gardens. In 1878 he secured a commission to do a bronze door for the Musée des Arts Decoratifs. It was to be covered with figures suggested by Dante's *Inferno*. He never finished it, but the figures and groups intended for it are among the sculptor's best works. Among them are "The Thinker," and "Adam" and "Eve." The latter two are in the Metropolitan Museum, New York City. His "Bourgeois de Calais" probably ranks next in importance to these. In its intense naturalism and dramatic energy, this work represents the culmination of the genius of Rodin. His monuments to Victor Hugo and Balzac showed unquestioned power, but a great deal of eccentricity. The latter was rejected, but the original study for the head is in the Metropolitan Museum. At the time of its exhibition critics received it with jest and jibe. Balzac was represented in a voluminous dressing gown, the features and figure roughly sketched. Critics exclaimed that it was "An enormous porpoise, standing upright, draped in a thick bath robe." They called it grotesque, huge, and flippant, while the more radical critics saw in it "the incarnation of the great writer's soul." The Society of Men of Letters, which had ordered the work, held the majority view that the work was incomprehensible, if not ridiculous, and rejected it outright. During his later years he executed a series of small groups of marble, to be seen from all sides, such as "Ugolio," "The Kiss," and the "Danaid," in the Luxembourg; "Pygmalion and Galatea," "Cupid and Psyche," "Orpheus and Eurydice," "The Hand of God," and "The Bather," in the Metropolitan Museum. He also executed a number of admirable busts of great power. There was a comprehensive exhibition of all his works at the Paris exhibition of 1900. Rodin was a tireless worker, the quantity of his work almost equaling its quality. His greatest output was in 1889, when no less than thirty-one pieces of sculpture were put on view at the Georges Petit Gallery in Paris. Rodin is well represented in many museums, the Metropolitan Museum of New York City possessing, through the munificence of Thomas F. Ryan, twenty-one examples of his work, besides many studies, drawings, and casts. Rodin himself gave eighteen signed plaster casts. The original pieces in this collection were chosen with the advice and approval of the sculptor. Besides those mentioned above, the bronze "Martyr" and the "Old Courtesan" are important works in the Metropolitan.

The bronze bust of "La France" by Rodin was presented to the United States by the people of France during the Tercentenary Celebration of the discovery of Lake Champlain (1909) and has since been mounted as a monument to Champlain at Crown Point, N. Y.

Rodin in his later life received many honors. Upon the death of Whistler he became president of the International Society of Painters, Sculptors, and Engravers. Early in the European war he sent a collection of his works to England as a token of admiration of the British troops, and later he executed a deed of gift to the French government of the entire collection of his own works, other art objects he had acquired, and the Hotel Biron, in which they were assembled, for a museum. Rodin's drawings are almost as wonderful as his sculptor work, he having contributed illustrations to Bergerat's "Engnerrande," etc. He is the author of *L'Art; Venus; Les cathédrales de France.*

Rodin's art is the culmination of the naturalistic sculpture of the nineteenth century. He shows a wonderful knowledge of anatomy as well as a profound mastery of technique, which he adapts with equal skill to all materials, marble as well as bronze.

For an account of his life in English consult: Camille Mauclair, *Auguste Rodin* (English translation by Black, N. Y., 1905); Frederick Lawton, *Life and Work of Auguste Rodin* (N. Y., 1907); Rudolph Dircks, *Auguste Rodin* (London, 1909); Frank Harris, *Contemporary Portraits* (N. Y., 1915).

ROENTGEN, ENGELBERT. See MUSIC, *Artists*, Instrumentalists.

ROMAN CATHOLIC CHURCH. The most important event for the Catholic world during 1917 was the promulgation, on June 28, by Pope Benedict XV, in the constitution *Providentissima Mater*, of the new code of Canon Law. This codification, begun by Pius X, on March 19, 1904, had been pushed to completion by a commission of cardinals aided by the best legal talent of the Church. It is a complete restatement of the law of the Catholic Church and is a work on canon law comparable only to that of Justinian in regard to the law of Rome, and is something no other Pope had ever done or even attempted to do. It is epoch-making for the fame of Benedict XV, in that, for the first time, there is collected, in a comparatively small volume of 448 pages, the entire law, and not the law of a period, and a code in the actual sense of the term. Grouped together there are (1) the restating of all current law in 2414 brief articles or canons; (2) the elimination of all obsolete and conflicting enactments. It is for the layman the body of law regulating the life of the great spiritual society of which he is a member. The new code goes into effect May 19, 1918.

Complications growing out of the war continued to disturb the regular conduct of the details of the administration in Rome of the affairs of the universal Church. On August 1 Pope Benedict addressed peace proposals to the leaders of the belligerent nations. President Wilson replied on August 27 and Germany September 21. See WAR OF THE NATIONS; UNITED STATES AND THE WAR.

A brief lamenting the divorce evil was sent by the Pope to the hierarchy of the United States on January 15, and in August the Consistorial Congregation published a series of special rules for the bishops all over the world for the regulation of preachers and preaching.

STATISTICS. From the figures compiled for the *Official Catholic Directory* for 1917 it is computed that there are now 25,436,136 Catholics under the American flag; 17,022,878 in continental United States and 8,413,257 in the Philippines and island possessions. Fourteen archbishops, three of whom are cardinals, 96 bishops, and 19,983 priests govern the Church in the United States. Of the priests 14,602 are seculars and 5381 belong to the regular orders. There are 15,520 parishes; 10,190 having resident pastors and 5330 being mission stations. During the year 357 new parishes were organized. There are 102 ecclesiastical seminaries, with 6898 students; 216 colleges for boys; 676 academies for girls; 5687 parochial schools with 1,537,644 pupils; 293 orphan asylums; and 106 Homes for the Aged. Twenty-seven States have a Catholic population of more than 100,000 and they are rated in this order: New York, 2,962,971; Pennsylvania, 1,865,000; Illinois, 1,482,587; Massachusetts, 1,406,913; Ohio, 832,894; New Jersey, 712,000; Michigan, 631,000; Wisconsin, 586,857; Louisiana, 549,700; Missouri, 531,000; California, 524,233; Connecticut, 508,498; Minnesota, 478,335; Texas, 411,790; Maryland (including District of Columbia), 278,000; Rhode Island, 275,000; Iowa, 263,431; Indiana, 255,255; Kentucky, 181,686; New Mexico, 150,573; New Hampshire, 134,009; Maine, 133,627; Kansas, 131,128; Nebraska, 115,433; Colorado, 110,987; North Dakota, 104,371; Montana, 101,200.

Three cardinals died during the year: Diomede Falconio, former Apostolic Delegate to the United States (February 7); Charles von Hornig, Bishop of Veszprem, Hungary (February 9); and Francis von Bettinger, Archbishop of Munich. These made 16 deaths in the Sacred College during the pontificate of Benedict XV and reduced the cardinals to 64. Of these 34 are Italians; 30 of other nationalities; 37 are incumbent of sees and 27 reside *in curia* at Rome.

The American hierarchy lost by death: Archbishop James H. Blenk of New Orleans (April 20); Bishop James A. McFaul of Trenton (June 16); Bishop N. C. Matz of Denver (August 8); Bishop A. J. Glorieux of Boise, Idaho (August 25). Other notable deaths were: Archbishop Gonzales, Pueblo, Mexico (February 3); Archbishop Aversa, Apostolic Delegate to Munich (April 14); Archbishop Thomas J. Carr of Melbourne (May 6); Bishop E. T. O'Dwyer of Limerick (August 27); Archbishop Thos. F. Kennedy, rector of the American College, Rome (August 28). Others who died were: Brother Potamian (Michael J. Walsh of the Christian Brothers), a noted scientist and educator (January 23); Thomas B. Minahan, first president of the American Federation of Catholic Societies (August 17); Eleanor C. Donnelly, author and poet (May 1); Sister Teresa Vincent (Jane C. McCrystal), head of the New York Foundling Hospital (May 23); Mother Francis Xavier Cabrini, founder of the Sisters Missionaries of the Sacred Heart (December 22).

Other notable changes among the hierarchy were: Consecration of Right Rev. William T. Russell of Washington, D. C., as Bishop of Charleston, S. C. (March 15); Alaska made a Vicariate Apostolic with seat at Juneau and the Rev. Joseph R. Crimont, S.J., named Prefect-Apostolic and titular Bishop of Ammedara (March 27); Very Rev. D. M. Lowney appointed Auxiliary Bishop of Providence, R. I., and Titular of Adrianople (July 13); Bishop J. H. Tihen of Lincoln, Neb., transferred to Denver (September 15); Very Rev. John Cantwell, V.G., San Francisco, appointed Bishop of Los Angeles and Monterey (September 15); Rev. John M. Gannon, D.D., of Meadville, Pa., appointed Auxiliary Bishop of Erie, and Titular of Nicopolis; the name of the diocese of Kearney, Neb., was changed to Grand Island and the see seat transferred to Grand Island (May 8); Archbishop Cerretti, Apostolic Delegate to Australia and formerly of Washington, D. C., was recalled to Rome to be Secretary of the Congregation of Ecclesiastical Affairs, and Mgr. Cataneo, Titular Archbishop of Palmyra, was made his successor in Australia (May 24); Bishop H. Gabriels of Ogdensburg celebrated his Silver Jubilee (May 8); and Archbishop S. J. Messmer of Milwaukee celebrated his Golden Jubilee (March 27).

The archbishops of the United States, in session at Washington, April 18, sent an address to President Wilson, reaffirming "in this hour of stress and trial our most sacred and sincere loyalty and patriotism towards our country, our government, and our flag." Right Rev. Patrick J. Hayes, Auxiliary Bishop of New York, was appointed chaplain-general for all Catholics in the American military forces (December 5).

Important conventions and conferences included: Catholic Educational Convention, Buffalo, N. Y., June 25-28; Supreme Council, Knights of Columbus, Chicago, August 12-16. Reports showed membership of the Knights of Columbus, June 30, 1917, to be 389,331, an increase of 27,000 during year. It was resolved to raise a fund of $3,000,000 to enable the War Committee to provide chaplains and all material details for the welfare and recreation of Catholic soldiers. The sixteenth annual national convention of the American Federation of Catholic Societies was held at Kansas City, August 26-28. The federation was reorganized on the diocesan plan. The sixty-second annual convention of the Central Verein was held at St. Louis, August 19. The National War Council under direction of the hierarchy was organized at Washington, August 10-12.

The Lætare Medal was conferred on Admiral William S. Benson, U. S. N. (March 18).

ROOSEVELT, THEODORE. See UNITED STATES AND THE WAR.

ROOT, ELIHU. See UNITED STATES AND THE WAR.

ROPE. War bread as made in Great Britain

(1917) is composed of wheat and flour milled at 81 per cent with the addition of 20 per cent of maize products, barley, oatmeal, rye, rice, and beans. This bread is said to be more nutritious than ordinary white bread, and, while not unpleasant to most people, in not a few it produces indigestion, with skin eruptions, and the bread itself quickly becomes stale and uneatable. Moreover, a so-called disease of the bread—"rope"—has made its appearance in various sections. When a piece of ropy bread is broken its interior is found to be gummy, and when pulled apart the sticky substance is drawn out into glistening strands. The rope disease has been shown to be due to a microörganism called *Bacillus mesentericus*, which is generally present in dirt or dust found on the outer husk of wheat. The bacillus normally is quite harmless, but in favorable conditions, it causes fermentation, and the bread baked from it becomes ropy. It is at first unwholesome, and later becomes uneatable. Various explanations are offered for the production of this diseased bread. The bakers have found it impossible to maintain an exact weight of the loaf, as the law demands, and this has developed a tendency to underbaking. Again, after the bread is baked, in order to avoid loss in weight, the bakers may cover the bread with a damp cloth, thus encouraging the germ. The *Bacillus mesentericus* is able to endure a high temperature without being killed. One authority states that five hours' boiling is necessary for its destruction; thus the process of baking infected flour would only encourage the microörganism.

ROSENTHAL, Toby Edward. An American landscape and genre painter, born in New Haven, Conn., in 1848. He studied in San Francisco and in Munich. He made his home for the most part in the latter city. His works are executed in the romantic, rather conventional style of the early Munich school, and contained nothing distinctively personal or American. They include: "Morning Prayers in the Bach Family," (Leipzig Museum, 1870); "Trial of Constance de Beverly"; "Dancing Lesson during the Empire"; and "Elaine." The last mentioned painting was the sensation of the year (1876). It was awarded honorable mention by the judges, and the artist was heralded as one of the most promising of the younger generation of American painters. It was sold for $10,000 and was presented to the California Museum of Art at San Francisco. A short time later it was stolen from the museum and has never been heard of since. He died c. December 28, 1917.

ROWING. Practically every regatta of prominence was cancelled in 1917 as the result of the entry of the United States into the war. The only race of importance held was that between the Yale and University of Pennsylvania eights on the Schuylkill River in April. The distance was one and seven-eighths miles, Yale being the winner by one and one-fifth seconds. Yale also captured the event for junior crews. The triangular race of the Pacific Coast college eights, University of Washington, Stanford University, and University of California, was won by the Washington crew.

The board of stewards controlling the intercollegiate regatta held annually on the Hudson River, near Poughkeepsie, settled a long controversy by voting to reduce the length of the varsity race from four miles to three. Charles E. Courtney, the veteran Cornell rowing coach, and James Rice, the coach of the Columbia crews, were chiefly responsible for the change. They had long contended that the four-mile course was too great a tax on the strength of the oarsmen. It is to be noted in this connection that the authorities at Yale and Harvard still adhere to the longer course for their race at New London.

RUBBER. During 1917 the immense consumption of crude rubber, which characterized the previous year, still further increased in spite of the curtailment due to industrial chaos in Russia, and the war conditions in England, France, and Italy, where the high cost of gasoline and oil tended to confine the use of motor cars to government and essentially commercial purposes. While the production of pneumatic tires was greatly lessened during the year, the crop of solid tires was greatly increased, and trucks and motor wagons of many kinds came into wider use. The great demand for rubber for war purposes added to the consumption in America, where the universal use of automobiles was also a considerable factor.

The continued growth of the American tire industry and the demands of the war therefore made the year's consumption of crude rubber nearly equal to production. In spite of that, the world's available stock is now greater than ever. The total visible supply on December 31 was estimated at about 30,500 tons: 13,000 tons afloat and 17,500 tons in British, American, Russian, and East Indian stocks, or about 20,000 tons more than the production of 1916.

During the first months of 1917 the prices were generally favorable to sellers. In London, bale crêpe began at 3 shillings, and brought 3*s.* 5*d.* in February, after which prices declined until 2*s.* 5*d.* was accepted in June. During the last half of the year, considerable speculation was attempted by outside interests which endeavored to force prices upward on account of the German submarine activities and the scarcity of ship tonnage, and the fact that rubber is one of the few articles that had not advanced greatly in price. This attempt was entirely unsuccessful.

World Production. The total production of crude rubber of all grades in 1917 was estimated at about 245,000 tons, an increase of nearly 40,000 tons or about 20 per cent. The great crop from plantations in the Far East was chiefly responsible for this. About 80 per cent of the world's total production of crude rubber is now coming from this source. The following table shows the increase in production of crude rubber for the last three years.

	1917	*1916*	*1915*
Ceylon and India....tons	25,000	24,500	20,600
Malaya, Dutch East India, etc.	165,000	105,500	72,800
Amazonas (Brazil, Bolivia)	31,771	28,255	30,700
Peruvian and Caucho....	9,729	8,245	6,800
West Coast, Africa.....	3,000	2,000	2,500
Benguela and Mossamedes			1,900
Loanda			600
Congo, French Congo, and Sudan	3,500	5,000	3,000
From other sources.....	2,500	4,500	7,100
Totals...............	240,500	*178,000	146,000

* Underestimated. Actual production about 201,600 tons.

The consumption of crude rubber of various grades exclusive of large quantities of reclaimed rubber was estimated as follows:

	1917	*1916*	*1915*
England ....tons	26,000	25,000	24.000
Germany, Austria, etc....	1,000	1.500	3.000
France	10,000	8,500	7,000
Russia	7,000	20.000	16,000
Italy, Spain, Scandinavia, etc.	5,500	4,000	2,500
Japan and Australia.....	5,000	5,000	4.000
America and Canada.....	155,000	114.000	89.500
Totals...............	210,000	* 178,000	146,000

* Underestimated.

All countries show increases except the Teutonic nations and Russia, the United States, France, and Italy being most conspicuous. It will be noted that the Russian consumption decreased nearly two-thirds as a result of disturbed industrial conditions following the revolution.

RUMANIA. A European constitutional monarchy, bordering on the Black Sea. It includes the former principalities of Moldavia and Wallachia, with the territory of the Dobruja. The country is separated from Hungary by the Carpathian Mountains and the Transylvania Alps, in part by the Danube River from Bulgaria, by the Pruth from Russia. The capital is Bucharest. Upon the occupation of a large part of Rumania by the Austro-German troops in 1916, the government was removed to Jassy, and Bucharest was captured by enemy forces.

Area and Population. The area of Rumania is stated at 137,902 square kilometres (53,244 square miles). This includes the area of the territory acquired from Bulgaria by the Treaty of Bucharest (August 7, 1913), 7725 square kilometres (2983 square miles); this territory now forms two districts, Caliaera and Duroster. Area and population by districts will be found in the 1915 Year Book. The total population at the last census was 7,509,009.

The German Invasion. In the most tragic situation, her soil under the heel of the invader, her rulers badgered to enter into a German-made peace, harassed by her own ally, Russia, and cut off from all help from England and France, her army trapped on Russian ground, and her king virtually a prisoner at Jassy, Rumania refused to desert the Entente or to conclude a separate peace. The Rumanian minister at Washington, Dr. Constantine Angolasca, received from his government the assurance that Rumania "will survive or perish with the Allied cause."

The Rumanian minister for foreign affairs telegraphed, February 7, 1917, to the Rumanian legation in Paris that Germany had begun to transport for internment in Germany all Rumanian males from sixteen to sixty-seven years of age; although the French, Russians, Italians, and Portuguese protected by the Spanish Legation were being left in the country.

Charles J. Vopicka, of Chicago, United States minister to the Balkan States for three and a half years, arrived in the United States March 19, 1917. In speaking of conditions in Rumania, he said that the Standard Oil Company had lost about $35,000,000 through the damage to its property in Rumania, and that all the wells would have to be redrilled after the war. He added: "After the entry of the German troops all the food supplies in the city were commandeered for the use of the soldiers. The poor of Bucharest besieged the gates of the United States Legation in such legions that the gates had to be closed. It was difficult to get food for the staff, and I had to obtain a permit from the German commander to obtain 2500 pounds of grain to make into bread."

Great Britain agreed to loan Rumania £40,000,000, according to an official statement issued at Jassy. The loan would be at 5 per cent interest.

Government. Persistent rumors emanated from Petrograd at the end of 1917 to the effect that King Ferdinand had abdicated in favor of Crown Prince Charles. King Ferdinand, who is a member of the Hohenzollern family, succeeded his uncle, King Charles, in October, 1914, King Charles having died at Sinaia on October 10. Rumania declared war on Austria on August 27, 1916, and King Ferdinand took personal command of the army soon after. King Ferdinand is the son of Prince Leopold of Hohenzollern-Sigmaringen, and two of his brothers are generals in the German army. He was born at Sigmaringen August 24, 1865. Crown Prince Charles was born October 3, 1893, and is an officer in the Rumanian army. He is unmarried, although early in 1914 it was reported that his betrothal to the then Grand Duchess Olga of Russia had been arranged. Queen Maria of Rumania, who was a duchess of Saxe-Coburg-Gotha, is a granddaughter of the late Queen Victoria and was married to King Ferdinand on January 10, 1893.

The ministry as announced on January 13, 1917, was as follows: Premier, M. Bratiano; Foreign Affairs, the Premier; Interior, M. Constantinescu; Education, M. Duca; Finance, M. Antonescu; War, Vintila Bratiano; Justice, Michael Contacuzene; Public Works, M. Justiano; Industry and Commerce, M. Greceanu; Agriculture and Domains, M. Mirecu; Without Portfolio, M. Jonescu, M. Continescu, and M. Ferekide; President of the Chamber of Deputies, M. Mirtzun.

History. During 1916 it was frequently rumored that the sudden collapse of Rumania was due to the secret policy of the Russian government, but so long as the old régime lasted nothing definite was openly said. After the revolution it was charged that the defeat of Rumania by the Germans was sought by the pro-Germans Stürmer, Protopopov, and the other reactionaries at that time in control of the Russian government. (See preceding Year Book, Russia, *History*.) The details were published in 1917 by the former chief of staff of the Rumanian army, Gen. Iliesco, and it was said that the Russian provisional government had in its possession documents proving the treason of the czar's ministers. In the first place Stürmer was said to have dissuaded Rumania from her original design of attacking Bulgaria at the outset. He assured the Rumanians that the Bulgarians would never march against them. When the Bulgarians manifestly were about to fight, the czar promised to send some army corps into Wallachia, but through the intrigues of Stürmer this was prevented. Thereupon the Rumanians were obliged to withdraw their troops from Transylvania and this brought on the general retreat. Gen. Iliesco declared in April, 1917, that the situation had been fully understood in Rumania for months and that he himself had realized it as long before as December, 1916. In journeying at that time from Jassy to Petrograd he had noticed at many stations vast numbers of freight trains, loaded with all sorts of munitions, standing on the side-tracks, neglected. They were marked, "From the war minister of France to the war minister of Rumania." Surprised at the sight he inquired about it at the stations of Kieff, Moghileff, Kichineff, and other cities and received the stereotyped answer: "Stopped by order of the government;" and this order was given at the very moment when the Rumanian army was making desperate appeals for supplies. Before that the treason of Russia had been suspected. The head of the French mission to Rumania had warned the king of it in October. It was further charged that the demand of the Entente Allies in July that Rumania should enter the war forthwith was made exclusively at the instance of the Russian cabinet, and that Stürmer was acting as the tool of the German government, which wished Rumania to come in at that moment. Germany was sure of crushing her at that time, and as there were signs of slackening on the part of Bulgaria and Hungary, here was the chance for Germany to appear as their savior by putting an end to the Rumanian peril. In short, Berlin knew that Rumania would enter sooner or later and took measures to insure her entry at the time when she could best be dealt with.

On the other hand, the Petrograd government knew that war munitions were inadequate in Rumania; that immense quantities were on their way to her from France and England; that Rumanian intervention was timed for the spring of 1917 when she would have been prepared and when her allies would have begun a new general offensive. Put off till then the entry of Rumania would have been a severe menace to the Central Powers. See WAR OF THE NATIONS, *Military Operations* (2).

RUPEES. See COINS.

RUSSIA. Geographically a country that includes a large part of eastern Europe and northern Asia; it extends from the Baltic Sea to the Bering Sea and from central Europe and Asia to the Arctic Ocean, and covers one-sixth of the earth's total land area. Politically, until March, 1917, an empire under the absolute rule of the czar. After the coup d'état which resulted in the abdication of the then czar, Nicholas II, a provisional government under the virtual leadership of Alexander Kerensky, remained in authority till overthrown by the Bolsheviki, headed by Lenine and Trotzky. At the end of 1917 Russia may be described as a conglomeration of nations without a head, made up of divergent elements without union or mutual loyalty, under a self-constituted government without power to rule, backed by an army without shoes, bread, weapons, or the will to fight. The capital is Petrograd.

AREA AND POPULATION. A complete table of area and population by districts, as well as a list of principal cities with their population, will be found in the 1916 YEAR BOOK. Area and population by great divisions, the area being exclusive of the great internal waters, in square versts (1 square verst = .439408 square miles), are shown below:

	Area	*Population*	
	Sq. Versts	*1897*	*1913*
Europ'n Russia	4,238,711.7	94,215,400	125,684,800
Poland	111,554.2	9,455,900	11,960,500
Caucasus	412,310.8	9,248,700	12,512,800
Siberia	10,940,644.7	5,699,000	9,788,400
Central Asia...	3,110,623.7	5,724,700	10,957,400
Finland	286,041.8	2,555,500	3,196,700
Total.....	* 19,099,886.9	126,896,200	174,099,600

* 21,741,600 sq. kilometers; 8,394,018 square miles.

The various nationalities were represented about as follows: Russ, two-thirds of the whole population, or 65.5 per cent; Poles, 6.2 per cent; Lithuanians, 2.4 per cent; Germans, 1.6 per cent; Armenians, 0.9 per cent; Jews, 3.9 per cent; Caucasians, 0.9 per cent; Finns, 4.5 per cent; Turco-Tartars, 10.6 per cent; Mongols, 0.4 per cent; various, 2.0 per cent. The census for 1915 showed a total population of 182,182,600, an increase of 2.1 per cent over that of 1914.

The object of German machinations was to distintegrate Russia by breeding dissatisfaction among her peoples and splitting the former empire into numerous small principalities. Bessarabia declared its independence as the Moldavian republic to form a part of the Russian federated republic. Bessarabia is a government of southwestern Russia, adjoining Rumania. About half the inhabitants are Rumanians. The population is in the neighborhood of 2,000,000. Kishinev is the capital. Total area, about 18,000 square miles.

It was reported that an autonomous government had been formed in Turkestan, with M. Tynyssavaiff, a member of the second Duma, as premier. The Siberian district congress at Tomsk elected a provisional government headed by President Potanin, with a coalition cabinet which included Constitutional Democrats. The Finns were awaiting only the peace congress to accord them international guarantees for their liberty and independence, and the Little Russians of the Ukraine had organized an independent republic (see UKRAINE). Finnish independence, accompanied as it would be by the autonomy of Lithuania, Courland, Livonia, and Esthonia, would shut off Russia from the Baltic, while an independent Ukraine, including Odessa, as well as Kiev, Kharkov, and Poltava, would cut off Russia from the most fertile of European provinces and also from the Black Sea. In addition, the Caucasus, Turkestan, the Cossacks, the Mussulmans, and the Tartars had declared their autonomy and had established their own governments, or expressed their intention of doing so. The national sentiment of the Poles had come out of the ordeal stronger than ever, and they were united in demanding the status of an independent nation. In numbers, the Poles are capable of becoming a first class power, since it has been estimated on trustworthy information that the three Polands combined would show a population of 40,000,000. But the majority of the Russians want a federated republic. Ukrainia itself desired only to be an integral part of such a federation, not a completely independent republic.

The section of western Russia which Germany intended to retain at any cost, as vaguely defined by Gen. Hoffman to the Russian delegates at Brest-Litovsk, included a large part of the so-called Baltic provinces and nearly all of

Courland and Kovno. They intended to hold the entire eastern shore of the Baltic Sea south of the Gulf of Finland and to join this huge territory to East Prussia, which it touches on the southwest. This territory would include the western part of the province of Esthonia, most of Livonia, practically all of Courland and Kovno, and all of Poland. Reval, menaced with immediate seizure, is in the central part of Esthonia on the south shore of the Gulf of Finland.

While Russia is the largest homogeneous state in the world, she is also the most inaccessible. All Europe has a coastline of 19,820 miles, but Russia has less than one-sixth of this coastline, and the largest part is ice-blocked during a considerable period of the year, so that she is at times almost cut off from the sea. In addition, even the southern rivers freeze, so that during six months of the year navigation on the Don and on the Volga below the Kama is impossible. Petrograd is the most northern capital in the world. The best soil and most densely populated provinces lie along the great rivers in the south and on the seacoast. The river Don is 1325 miles long, is navigable for nearly 1000 miles, and with its tributaries drains a territory of 170,000 square miles. The Dnieper is 1100 miles long, is navigable for nearly 1000 miles, and drains a district of 242,000 square miles. The Volga, the largest river in Europe (with its tributaries, the Kama 1300 miles long, and the Oka 900 miles long, and innumerable smaller ones), has a length of 2400 miles, and serves a district of no less than 563,000 square miles, inhabited by something like 70,000,000 people.

Economic Conditions. Details of production in pre-war periods and for three war years will be found in the Year Books for 1916 and 1915.

The *Novaya Zhizn* quotes official figures showing that, whereas the average crops during the five years preceding the war amounted in European Russia, excluding the now occupied territories and the Northern Caucasus, to 3,830,000,000 poods, in 1916 it amounted only to 3,242,000,000 and in 1917 to 2,964,000,000, which makes a decrease of 23 per cent. The main factor responsible for this decrease is the depletion of the country population of its able-bodied males by the war, which, as is credibly estimated, has involved, from start to finish, the mobilization of 19,000,000 men.

The *Retch* of October 27, 1917, quotes the following passages from the reports reaching the ministry of railways:

"On the Moscow-Kiev-Voronezh Railway only 75 wagons of freight are accepted daily, instead of the normal 450, in consequence of the frequent failure of the engine personnel to turn out, owing to the lack of boots, the necessity of obtaining bread, etc. . . . On the southern railways the lack of conductors is causing an enormous congestion of wagons with freight, while on others the lack of fuel and engines, as well as the failure of the engine personnel to turn out for the performance of duties are creating serious difficulties."

Under date of May 30, 1917, the Central Statistical Committee published the figures of stocks in Russia, excluding territories in enemy occupation. Generally speaking, the data given are of stocks in traders' hands (in quintals), January 14, 1917, and December 14, 1916:

	Wheat	*Rye*	*Barley*	*Oats*	*Wheat-Fl.*	*Rye-Fl.*
1917	6,031,613	2,746,676	1,135,498	1,977,941	1,716,345	1,836,080
1916	6,658,657	2,757,650	1,914,876	2,015,943	2,025,771	1,975,483

Taking all grain and flour together, these stocks show 12,884,106 quintals in European Russia, 1,565,099 quintals in Siberia and in Central Asia, and 1,210,902 quintals in Caucasia. The aggregate decrease from December 14, 1916, to January 14, 1917, was 1,830,189 quintals.

Commerce. Totals and details (the latest available) of Russia's commercial operations for 1915, 1914, and pre-war periods will be found in the 1916 and 1915 Year Books.

The following figures are compiled for half years (for the sake of accurate comparison, since totals for 1917 are not available) from Russian official statistics:

The total import trade of Russia over the European frontiers and with Finland for the first half of 1914, 1915, 1916, and 1917 was as follows: 1914—$365,709,000; 1915—$79,401,000; 1916—$161,482,000; 1917—$199,699,000. The marked increase in the value of imports in the 1917 period was due partly to higher prices, which were counterbalanced, however, by falling exchange rates, the conversion factors for the ruble being 51.5 cents (the normal rate) for the first half year of 1914, 43.15 cents for the first half of 1915, 31.55 cents for the first half of 1916, and 23.4 cents for the first half of 1917. Exports during the first half of 1917 amounted to $26,017,000, as against $53,246,000, $40,634,000, and $348,959,000 in the corresponding periods of 1916, 1915, and the normal year 1914 respectively.

The value of the goods received into European Russia and sent from European Russia by the European and the Black Sea-Caucasus frontiers,

Imports	*1914*	*1915*	*1916*	*1917*
European frontiers	338,900	42,047	98,378	127,137
Through Asiatic Russia				16,213
Black Sea-Caucasus Frontiers	9,896	173	552	133
Through Finland	2,415	22,245	32,814	34,448
From Finland	14,498	14,936	29,738	21,768
Total imports	365,709	79,401	161,482	199,699
Exports				
European Frontiers	289,671	13,801	21,695	6,868
Black Sea-Caucasus Frontiers	47,140	.....	.....	.....
Through Finland	.....	2,406	3,976	2,446
To Finland	12,148	24,427	27,575	16,703
Total exports	348,595	40,634	53,246	26,017

by way of Asiatic Russia and Finland, and in the trade with Finland, is shown in the table on page 595, for the first half of comparative years (values in thousands of dollars):

The amounts received and dispatched "through Finland" represent foreign products entering European Russia *via* Finland or Russian goods exported *via* Finland to other countries, of which the foreign origin or destination was declared. The merchandise noted as entering from and proceeding to Finland represents the actual exchange of Russian and Finnish products and also goods coming from or going to foreign countries whose source and ultimate destination were not declared. The imports from foreign countries by way of Finland should be credited chiefly to Sweden, the United Kingdom, and the United States. It is of interest to note that imports to Germany *via* Finland, which amounted to only $357,000 in the first half of 1914, a normal period, increased to $2,484,000 in the first half of 1915, fell to $656,000 in the first half of 1916, and rose again to $1,244,000 in the first half of the current year. In 1917 for the first time the value of goods received into European Russia through Asiatic Russia and registered at the custom houses on the European frontier is indicated separately in the statistics.

The United Kingdom sent 30 per cent and the United States 26 per cent of the imports into European Russia in the first half of 1917; but in the export trade the share of the United States was insignificant, while the United Kingdom received 21 per cent and Finland 64 per cent. The following table shows the total imports and exports of European Russia, by countries, for the first six months of comparative years (values in thousands of dollars):

Imports	*1914*	*1915*	*1916*	*1917*
United Kingdom..	48,586	25,957	36,290	61,671
United States....	34,338	7,802	40,870	49,732
France	18,646	2,948	18,890	33,444
Finland	14,498	14,936	29,738	21,768
Sweden	3,652	5,250	1,689	11.187
Japan	656	2,397	5,046	5,705
China	3.912	2,985	4.868	3,574
Norway	2,183	417	1,590	3,395
Switzerland	1,559	532	1,188	1,397
Germany	181,364	5,947	841	1,338
All other	56.315	10,230	20,472	6,488
Total imports..	365,709	79,401	161,482	199,699
Exports				
Finland	12,148	24,424	27.575	16,703
United Kingdom..	60.853	13,039	17,023	5,362
Sweden	2,564	559	1,038	1,389
France	24.225	1,022	4,759	1,377
United States....	4.100	67	262	356
Germany	113,021	.....	.....	.....
All other	132.048	1.523	2.589	830
Total exports..	348,959	40.634	53.246	26,017

Important in the list of imports from the United States are the following: Copper, $3.290,000 in the first half of 1916, and $5,468,000 in the first half of 1917; automobile bodies and chassis, $2,679,000 in the former, and $4,197,000 in the latter period; iron and steel manufactures, $850,000 and $1,594.000; machinery of iron and steel, $2.358,000 and $1,791,000; and passenger automobiles. $1,357,000 and $1,313,000.

Railways. From Vladivostok to Moscow is 5391 miles, and to Petrograd 5481. In pre-war times the fastest express train required nine days to make the run, while ordinary mail trains took thirteen days. A first-class fare on the Trans-Siberian between Moscow and Vladivostok was approximately $160. Russia's foreign supply of munitions has had to cross Siberia, either from the Arctic Ocean or the Sea of Okhotsk. On leaving Moscow, the Trans-Siberian road runs through about 300 miles of the great western plain of European Russia to the city of Ufa at the foot of the Ural Mountains. The railroad attains the summit of the Urals, 1850 feet above sea level, between Ufa and Tchelyabinsk. Crossing out of the Tomsk government into that of Yenisei, the road shortly reaches Atchinsk, the northernmost town of the railroad. In skirting Lake Baikal the road passes through forty tunnels, through numerous giant cuts, and over many bridges. It continues to climb until it reaches Sokhondo, 3100 feet. After passing the junction of the road to Mukden, it drops to 700 feet, then climbs again to 2100, and thence back to sea level at Vladivostok.

With the vast extent of territory belonging to Russia, transportation facilities are an important consideration. As such they figured at the time of the revolution, and the establishment of the provisional government, and the rehabilitation and extension of the Russian railways was one of the prime recommendations of the United States Railway Advisory Commission, under the chairmanship of John F. Stevens, which was sent to Russia in June, and which spent considerable time and energy upon an investigation of the transportation problems brought up by the war. A Russian Railway Service Corps consisting of 350 experienced railway operating and mechanical officials was recruited in the United States and sent to Russia, and before the Kerensky government was overthrown by the Bolsheviki, a beginning had been made in working out a plan for expediting the transportation of supplies to Petrograd and the army, and the adequate supply of coal and other supplies to Moscow and Warsaw.

Henry Miller, former operating vice-president of the Wabash, and a member of the Railway Advisory Commission, on his return to the United States, reported (*Railway Age Gazette*, November 30, 1917, page 979) that Russia had in 1917 approximately 50,000 miles of railway, of which about 60 per cent was owned by the government and the remainder by private corporations. There were about 20,000 locomotives in service, most of them compound, of which number about 15 per cent were in bad order; and there were about 580,000 freight cars with average capacity of about 16 tons, of which about 8 per cent were in bad order. About 20 per cent of these freight cars had brakes, but only 13,000 cars built in the United States had airbrakes. By 1917, the Trans-Siberian line, including a detour line constructed *via* the Amur River, was practically all double track from Vladivostok to Omsk, a distance of 4000 miles. At the latter point the line divided in the form of a "Y," with branches extending to Petrograd and Moscow.

The United States Railway Advisory Commission issued a proclamation to the Russian people on July 4, stating its policy in assisting the Russian people and the railway administration. This commission advised the immediate construction in the United States of 2500 locomotives and 20,000 freight cars, and a beginning was made in shipping railway supplies to Vladivostok, where considerable material had been accumulated at the time when the Bolsheviki had supplanted the provisional government. The American commission found a lack of efficiency in operating conditions, as on the Trans-Siberian Railway the line was being operated to only about one-third the capacity that its physical equipment and personnel warranted. This line, as reported by S. R. Bertron, a member of the American Commission to Russia, had double the number of locomotives per mile and three times as many men employed as had the Pennsylvania. One result was the vast congestion at Vladivostok, which it was hoped would be removed by new locomotives and cars shipped from the United States, 75 of the former and 1000 of the latter being expected before the end of 1917. The American Railway Commission also took under consideration the increased efficiency of the Kola Railroad from the Port of Murman. This line was of great importance, as the port is ice-free when Archangel is closed, so that some 2000 tons of material a day could reach Russia *via* the Atlantic Ocean. With the change in political conditions in the autumn, the railway situation became worse, and consequently, the Japanese, representing the Allies, undertook guarding the supplies at the Pacific port. The general demoralization in the railways after the attempt at organization by the American commission culminated late in the year, when the commissioner of ways and communications under the Bolshevik government, sent telegraphic instructions to the Railway Men's Committee directing them to take control of the railroads in their own hands and stating that all high posts such as managers and department heads were abolished.

The new Bokhara Railway being constructed in Russian Turkestan under the auspices of joint Russian and British influences, acting in conjunction with local authorities, is described by Consul Henry D. Baker, formerly of Bombay, and also commercial attaché at Petrograd:

The three present railway activities in this transcontinental area are (1) the Bagdad railway to the south and its probable extensions east, through Persia and Baluchistan; (2) by way of the Caucasus district of Russia, Persia, and Baluchistan; and (3) the Afghanistan-Baluchistan route *via* Kusha in Turkestan to Herat and Kandahar in Baluchistan, the latter city being only 80 miles distant from New Chaman in Baluchistan, which is the terminus of the British Indian Railway systems.

The Bokhara Railway will go, with its extensions, south to the Oxus River and eastward along the north bank of this stream to the present terminus at Termez. Termez is only 550 miles from Peshawar on the Indian side of the Khyber Pass, which is in both a commercial and a military sense the gateway of India. The line will reach Sarai to the east, near the junction of the Kundus and the Oxus rivers, and then the task of tunneling the Hindu Kush will have to be undertaken. The distance from Sarai to the terminus of the Indian Railways is only about 400 miles, but it will involve the boring of a 13-mile tunnel beneath the Hindu Kush.

When the railroad is constructed, the distance from the Hook of Holland to the Indian capital at Delhi will be as follows: Hook of Holland, Berlin, Warsaw, Moscow, 1836 miles; Moscow, Crenburg, Tashkend, 2082 miles; Tashkend, Kagan, estuary of Kundus River, 750 miles; estuary of Kundus River to Peshawar, 400 miles; Peshawar, Delhi, 627 miles. Total, 5695 miles. Methods of further shortening this route are under consideration.

Intended new construction: Moscow-Shterovka, about 700 miles; Kharkov-Penza-Inza, about 600 miles; Orel-Novgorod, about 450 miles; Rybinsk-Kishtym-Mishkino, about 1000 miles; Uman-Nicolaev, about 240 miles; Kertch-Tokapse, about 200 miles; Saratov-Azov Sea, about 600 miles; Kiev-Gitomyr, about 150 miles; Alexandrovsk-Gay-Czardy, about 1200 miles; Kars-Borgom-Olty, about .... miles.

FINANCE. The extraordinary decline in the price of Russian ruble bank notes opened a discussion as to whether the bank notes issued by the Imperial Russian government previous to the war would be recognized by Russia after the return of normal conditions. Russian ruble bank notes, which before the war were quoted at $51.50 for every 100 rubles, were selling at the close of the year in the neighborhood of $9 for every 100 rubles, a discount of over 80 per cent. Concerning this question, Zimmermann and Forshay in a circular said: "The main reason for the extreme decline in the price of Russian rubles is an economic one and not merely an outcome of political disturbances. Russia, under the Bolshevik rule, is at odds with the Allied nations, and still being at war with Germany can expect no material help from that source. Her necessities, therefore, are partly supplied by the nations of the Far East, and conditions are such that she has to pay fabulous prices for commodities. The return to peaceful conditions will again open to Russia the markets of the outside world, and there seems to be good reason to believe that in time to come Russia will be in a position to reduce the amount of outstanding bank notes." Partial details of the budget for 1917 are given in the table below in thousands of rubles:

Revenue	*1,000 R.*	*Expenditure*	*1,000 R.*
Direct taxes....	566,057	Public debt.....	720.795
Spirits	39,835	Foreign affairs..	7,343
Tobacco	252,184	War	560,554
Sugar	254,473	Marine	181,555
Naphtha	87,027	Finance	354.207
Matches	36,017	Commerce, etc..	67.939
Customs	431,376	Interior	265,017
Railways	1,028,753	Instruction	214.212
Domains	45,991	Communications	978.745
Forests	111.206	Agriculture	144.397
Excise	49,600	Justice	118,976
Duties	442,196	Audit	13,746
Posts	113,976	Other	.....
Tels. and tels..	85,700		
Various	.....	Total ord. ...	3.734.657
Total ord. ...	3.998.632		
Extraord.	79.185	Extraord. ...	343.160
Total......	4,077,817	Total.....	4,077.817

The debt stood, January 1, 1917, at 25,990,936,895 rubles. The Bolsheviki propose to repudiate the Russian debt on the following grounds: The old debt, they say, was raised not for the benefit of the Russian people but to provide means for repression. When the loan of one hundred million pounds sterling was floated in London and Paris, 1906, the fate of the first Duma hung in the balance; the czar was at the point of bankruptcy; money was absolutely required to pay the Cossacks and assure their loyalty. If the Duma could have wielded the deciding power, it would have been able to lay the basis for a sound constitution, according to this theory.

But London and Paris rejected the plea of the Russian liberals and provided the czar with the money he required; for which debt, the present régime contends, Russia is not morally liable.

GOVERNMENT. Until March, 1917, Russia was an empire. On March 11 two ukases issued by the czar suspended the sitting of the Russian Duma and of the Council of the Empire. The Duma unanimously refused to dissolve and the Council of the Empire appealed to the czar to reconsider his decision and listen to the voice of the people. The czar, who was at the front, immediately started for the capital. He never reached Petrograd. At Pskov he was taken from his train and announced his abdication and that of the heir-apparent in favor of the Grand Duke Michael, who declined the undertaking. Meanwhile a new government was formed with Prince George Lvoff as Premier, Prof. Miliukoff, the leader of the liberals, as Minister for Foreign Affairs, and Deputy Kerensky, the leader of the workingmen, as Minister of Justice. The government imprisoned the former czar and czarina in Tsarskoe-Selo. March 22, the United States, through its ambassador, David R. Francis, formally recognized the new government. This example was followed, on March 23, by Great Britain, France, and Italy.

On July 20 Prince Lvoff resigned as Premier and Kerensky was appointed to the post. On August 2 Brusilov resigned as commander-in-chief of the Russian armies and was succeeded by Korniloff. August 7 Kerensky organized a coalition cabinet. On August 15 Nicholas and his family were removed from the palace at Tsarskoe-Selo to Tobolsk, in Siberia. Late in October the Bolsheviki openly opposed the Kerensky government, and on November 6 the revolt of the Bolsheviki began. On November 7 they seized Petrograd; Trotzky declared the government non-existent. On November 9 the All Russian Congress of Workmen's and Soldiers' Delegates named a cabinet, with Lenine as premier and Trotzky as minister for foreign affairs. Kerensky had fled from the capital. On December 4 a Bolshevik-German armistice was practically in effect, becoming actually effective December 7. At the end of the year Russia was in a state of chaos out of which loomed distantly the ideal of a federation of autonomous republics. For details, see *History* below.

HISTORY

EVENTS PRECEDING THE REVOLUTION. The murder of Rasputin (see preceding YEAR BOOK), whose body was found in the Neva on January 1, 1917, instead of serving as a warning, drove the czar's government to more reactionary courses. On January 9 a staunch bureaucrat, Prince Nikolai Golitzin, replaced General Trepov as prime minister and soon afterwards several reactionaries supplanted liberals in the Imperial Council. It was said that Protopopov in January was planning to overturn the government in the interest of the czar and that he deliberately caused a shortage of food in the capital in order to make the people demand immediate peace and, if riots broke out, to justify the dismissal of the Duma. The liberal elements now believed that the so-called "dark forces" were more active than ever. As a result of the complex political situation the reopening of the Duma and the Imperial Council was deferred from January 25 to February 27. On January 22 the czar in a rescript to the prime minister requested the settlement of the two great problems of supply and transport. Although the wisdom of these proposals was admitted there was criticism in liberal quarters of the arbitrary method employed, which it was said was now applied for the first time since the grant of the constitution in October, 1905. It was complained that nothing was done by the government in response to the emphatic demand of the nation's representatives for a responsible government—a demand that was supported by the people and the army. On the contrary ministers who were unacceptable to the nation were kept in power. Leading newspapers in Russia were now speaking plainly of radical changes in the government and were holding up England and France as examples. On the other hand, the so-called loyal element as represented by the "Black Hundred," urged the czar to pay no attention to the "monstrous, lawless Duma" in its demands for political reform, which, if carried out, would lead to the overthrow of the czar and the introduction of parliamentary government. At the beginning of February there was dissension in the Council of Ministers on the question of the representation of labor in the central industrial munitions committee, the majority, including the prime minister, being in favor of it and, M. Protopopov, minister of the interior, and a few others being opposed. In order to test the loyalty of the working class a midnight raid was made on the houses of suspects and evidence was reported of a secret organization for the purpose of directing strikes. Soon after this the arrest of fifteen workingmen, including eleven members of the workingmen's group of the central industrial munitions committee, was reported.

THE REVOLUTION. On the day of the opening of the Duma (February 7) about 100,000 workmen went on strike in Petrograd and 25,000 in Moscow, as a political manifestation on behalf of the Social Democrats. At the beginning of March the food crisis became acute. The people fearing a shortage of bread began to make raids upon the bake-shops. The streets were soon filled with mobs and cavalry patrols were moving in every direction. A good deal of damage was reported in the suburbs and in the manufacturing districts. On the evening of March 9 an extraordinary conference was held in which, at the instance of the president of the Duma, the management of all food supplies in Petrograd was placed in the hands of the city authorities. The riots continued and the government, as noted above under *Government*, ordered the prorogation of the Duma, March 11. but the Duma refused to dissolve. Meanwhile it had become clear that the military could not be depended upon. When ordered to fire upon the mob, many regiments refused to do so, and turned their arms against the police. There was sharp fighting in the streets but the number of lives lost was uncertain. Ac-

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ALEXANDER KERENSKY
Premier of the Russian Provisional Government

Photo from Underwood & Underwood

GENERAL KORNILOFF
Commander-in-Chief of the Russian Armies
under the Kerensky Government

Photo from Underwood & Underwood

NIKOLAI LENINE
Premier of the Bolshevik Government

Photo from Underwood & Underwood

LEON TROTZKY
Minister of Foreign Affairs of the Bolshevik Government

FOUR LEADERS IN THE RUSSIAN REVOLUTION OF 1917

cording to some reports the number of deaths were placed as high as 2500, but in general the casualties were said to be comparatively slight. The police were the special objects of vengeance and were hunted down and killed in large numbers. Among the first acts of the revolutionary troops were the capture of the Viborg prison, the fortress of Saints Peter and Paul, and the Winter Palace, and the seizure of the persons of the cabinet ministers. Forcing their way into the administrative buildings they arrested former Prime Minister Stürmer, Prime Minister Golitzin, the Minister of the Interior, Protopopov, and other conservative members of the government. The members of the Duma except those of the extreme Right voted a resolution authorizing the executive council of the Duma to establish a provisional government. The czar was notified of the change of government and required to abdicate. On his way from the front to the capital, as above narrated, he was stopped at Pskov by representatives of the new government who persuaded him to issue a manifesto declaring his abdication and that of his son Alexis in favor of his brother the Grand Duke Michael (March 15). The latter declined to accept the throne except at the hands of a constituent assembly and after a popular vote. Other grand dukes and royal princes renounced their rights soon afterwards. The new government placed the Imperial family under arrest in the Tsarkoe-Selo Palace and the members of the former ministry in the fortress of Saints Peter and Paul. Meanwhile the government which had been in the hands of the revolutionary committee under the chairmanship of Michael Rodzianko, a member of the Octobrist party and former president of the Duma, gave place to a revolutionary coalition cabinet, under Prince Lvoff, conjointly elected by the labor leaders and the Duma on March 15. The three chief elements that had brought about the revolution were represented in the Lvoff ministry. Prince Lvoff himself, the organizer of the Zemstvo association (see preceding YEAR BOOK) represented the group of business men and landowners known as the Zemstvo patriots. The Constitutional Democrats or cadets were represented by Professor Paul Milyukof, Minister for Foreign Affairs, and others, the Octobrists by M. Gutchkov, and the third group, namely, the workingmen and soldiers, which turned out to be the strongest, was represented by M. Kerensky, Minister of Justice. He was a revolutionary Socialist and expressed the popular demand for a more just division of the soil, in other words, for agricultural democracy. The workingmen in the cities followed generally the leadership of the Socialist Tcheidze, whose principles were those of Marx, but at first they accepted Kerensky as their representative. On March 16 the government issued a manifesto demanding immediate reforms, including amnesty, liberty of speech and press, and of going on strike, abolition of social, religious, and national restrictions, substitution of a democratic militia for the police, universal suffrage for communal election, and a constituent assembly based on universal suffrage. On March 21 the government restored the constitution of Finland and promised Poland self-government and unity; amnesty for political offenders was granted on March 22. On March 26 it bestowed equal political, economic, and military rights upon the Jews. On March 31 it abolished the death penalty; replaced the provincial governors by the elected heads of the provincial county councils, and fixed prices of food at rates from 20 to 50 per cent lower than before. An excess war profits tax was levied on the products of all war industries. The imperial lands and those of the monasteries were confiscated. Trade unions were organized and the eight-hour day was adopted in most of the cities. A hundred thousand exiles returned from Siberia.

THE GOVERNMENT AND THE ARMY. One of the first things that engaged the attention of the new government was closer coöperation between military headquarters and the government; that is to say, between the front and the rear, and after a conference on March 29 it was decided to follow the British plan and form a war cabinet. This was to consist of M. Gutchkoff, Prince Lvoff, the Prime Minister, M. Kerensky, Minister of Justice, and the Ministers for Foreign Affairs, Finance, Agriculture, and Railways. There was evidence of disorganization and a lack of discipline in the army. General Alexeieff, who had replaced the Grand Duke Nicholas in the chief command, endeavored toward the end of March to introduce a number of reforms with a view to bringing the army up to a higher standard of efficiency. It was arranged that each unit should have a committee of elected officers and men to act as a conciliation board in matters of discipline and management. This committee was to be subject to an elected chief committee of officers and men attached to each of the staffs on the respective fronts and to headquarters. It was to be the source of information of all matters concerning the army. The main purpose of these changes was to introduce a system appropriate to the new order which at the same time would give the maximum efficiency. General Brusilov subsequently characterized the election of officers by the men as a dangerous invention, likely to turn the army into a mob.

THE NEW GOVERNMENT AND THE WAR. The Social Democratic party issued an appeal in March to the workers of all countries to unite in stopping a war which had begun and was carried on solely in the interest of kings, landowners, and banks. On March 27 the Petrograd council of the Workmen's and Soldiers' delegates held a monster mass meeting, at which more than 2000 were present to indorse this appeal. The attitude of this element may be summed up as follows: Down to the present time the Germans had looked upon Russia as a menace to peace and the Russian aggressions were supposed to be the forerunners of the Yellow Peril. Now that there was a free Russia which ceased to have any terror to the minds of the German masses, if the Russian nation would extend its hand to the German nation the latter would gladly respond and, following the example of the Russians, would overthrow its government.

On the other hand, representatives of other political groups urged the government early in April to pursue the war till liberty was won for the people and the army and denounced as shameful any peace that should be concluded without the consent of the Allies. About the same time the Prime Minister issued a statement in regard to military conditions and the war policy. He said that the negligence of the previous government had left the defense of the country in a disorganized condition, that it had weakened the whole economic system, but that the provisional government was now devoting all its energies to repairing these serious defects. The government declared emphatically that it was not the purpose of free Russia to dominate other nations or take their territory. It was not its wish to subdue or humble any one, but it would not allow its own land to come out of the contest weakened and humiliated. Those are the principles on which the provisional government based its foreign policy. The government demanded a firm support on the part of the people and called upon every one to do his duty, for it frankly declared that the state was in danger. Every effort must be made to save it.

The question of Russia's part in the war, however, was complicated by the growing power of the Council of Workmen's and Soldiers' delegates, which, on April 16, declared that it was necessary for it to control the course of the provisional government and appealed to the people for support, saying it was the only body that could repress reactionary movements. At the session of its executive committee on May 8 the representative of the Scandinavian labor parties, M. Borgbjerg, invited all Socialist parties in Russia to the international conference at Stockholm. He said that after interviews and consultations he could give the peace terms proposed by the majority of the Social Democratic party. These were the organization of the right of nations to freedom of development and the approval of the principle of compulsory international arbitration; German restoration of all conquered territories; a popular vote in Russian Poland to choose between independence, annexation by Russia, or annexation by Germany; restoration of independence to Belgium, Serbia, and Rumania; the return to Bulgaria of the Bulgarian parts of Macedonia; and the cession to Serbia of a free port on the Adriatic. The Alsace-Lorraine question was left somewhat indeterminate but the opinion was expressed that through a friendly understanding the rectification of the Lorraine frontier could be secured. The committee decided to take the lead itself in calling this international conference and to issue an appeal to the people and especially to the Socialists of the Allied countries. M. Borgbjerg announced on May 13 that direct communication had now been established between the Council of Workmen's and Soldiers' delegates and the German Social Democratic majority. The question whether the Socialists should be allowed to participate in the provisional government had been long discussed. On May 15 the executive committee of the workmen's and soldiers' delegates decided in favor of the participation of Socialists in the provisional government on the understanding that the principles of the government should involve an active foreign policy with the aim of attaining peace as soon as possible without annexations and without indemnities on the basis of the right of each nation to dispose of itself, that decisive measures should be taken for the democratization of the army and for the increase of the military strength at the front, and that finally certain social, economic, and financial reforms should be introduced.

On May 2 the provisional government published a note to the Allies saying that Russia would continue the war to a complete victory. This had been opposed in every way by the extremists or Maximalists. A large portion of the public were strongly influenced by the appeal of the Council of Workmen's and Soldiers' Delegates that there should be no annexations and no indemnities, and they were further influenced by the agitation of the group of Maximalists headed by Lenine who had been allowed to pass through Germany to attend the Stockholm conference, and who were charged by their enemies with having been bought by German money. The gap between the Council of Workmen's and Soldiers' Delegates and the provisional government was constantly widening. There was a long discussion between the two bodies before the note to the Allies was issued. The provisional government declared that it would resign unless the Council ceased to oppose this measure. On the evening of May 4 M. Milyukov and other ministers addressed the crowd at a demonstration before the Marie Palace where the government and the Workmen's and Soldiers' delegates were in joint session. They defended the government's attitude towards the war and declared that Russia would never consent to a separate peace. Finally on May 4 it was announced that the Council of Workmen's and Soldiers' delegates had passed a vote of confidence in the government by a majority of thirty-five, a very narrow margin in view of the fact that 2500 voted. The difficulty had been a distrust on the part of the Workmen's and Soldiers' Delegates of the words "complete victory" and certain other aspects of the note. Their confidence was restored by the explanation made by the government in a supplementary note subsequently issued in which it is said that the note, in speaking of a decisive victory, had in view the solution of the problems which were mentioned in the communication of April 9, namely:

"The government deems it to be its right and duty to declare now that free Russia does not aim at the domination of other nations, at depriving them of their national patrimony, or at occupying by force foreign territories, but that its object is to establish a durable peace on the basis of the rights of nations to decide their own destiny. The Russian nation does not lust after the strengthening of its power abroad at the expense of other nations. Its aim is not to subjugate or humiliate any one. . . . But it will not suffer that its own country shall emerge from the great struggle humiliated or weakened in its vital forces."

In May the course of events bearing on Russia's attitude toward the war was briefly as follows: The government requested the Allies to restate their peace terms. Nevertheless, the foreign minister, Milyukov, openly expressed the wish that Russia should obtain Constantinople. This provoked the anger of the anti-annexationists and on May 16 he resigned from the cabinet which was then reorganized, Tereshtchenko becoming foreign minister and Kerensky, minister of war. The new foreign minister, May 19, renewed the expression of Russia's desire for peace without annexations or indemnities, based on the principle that nations should have the right to dispose of themselves. At the same time the Russian government declared that it rejected all thought of a separate peace. Peace was to be obtained by appealing to the Socialists of the Central Powers to overthrow autocracy. On May 23 it expressly promised aid to Belgium. The German chancellor had publicly offered on May 15 an immediate separate peace, and the Austrian Emperor repeated this offer on May 31. Russia returned an unfavorable reply. The Allies during this time were endeavoring to revise their secret treaties and restate their terms of peace. On May 27 the French premier apparently accepted the Russian programme for peace without annexations or indemnities, but at the same time demanded the restoration of Alsace-Lorraine to France and the payment of indemnities to France, Belgium, Serbia, Montenegro, and Rumania. President Wilson's acceptance on May 26 was qualified by the exception that there must be indemnities for manifest wrongs done, and he added that there were to be no annexations except for the purpose of securing for the inhabitants a fair chance of life and liberty. The special mission from the United States under Elihu Root designed to counteract German efforts for a separate peace was announced the day before the reorganized coalition cabinet was formed. The sending of the American railway commission to aid in the reconstruction of Russian railways was also announced.

Programme of the Reorganized Ministry. At a meeting of the provisiinal government, the executive committee of the Duma, and the Council of Workmen's and Soldiers' delegates the programme agreed upon was as follows: Unity at all the fronts; entire confidence of the democracy in a reconstructed cabinet; full powers for the government. It was announced that the provisional government had come to the conclusion that it could not accept the formula of foreign policy proposed by the workmen's executive committee, namely, a policy that was to aim at peace as soon as possible without indemnities or annexations, because to accept this would involve the renunciation of the policy already announced to the Allies. The government raised no objection to the financial and economic reforms urged by the committee.

The attitude of the provisional government was set forth in detail a few days later. It declared that now that it had been reënforced by the revolutionary democracy, it was resolved to carry into effect the ideas of liberty, equality, and fraternity which were the basis of the revolution. Its chief line of action was to be as follows: In the first place it rejected with the approval of the entire people, the plan for a separate peace; it sought a peace that should neither tend towards domination over other nations nor to the seizure of their lands, but should be a peace without annexations or indemnities and should be based on the right of nations to dispose of their own affairs. In the second place the government expressed confidence in the troops and the belief that they would not let the German troops prevail. It declared that it would proceed with its plans of democratization; that it would fight against economic disorganization and would establish systematic control of production, transportation, exchange, and distribution; that it would bring in measures for the protection of labor; that the land question should be deferred to the Constituent Assembly, but that the government would take preparatory measures and would do all that was possible to promote the production of materials and to further the use of the soil in the interest of the working classes. As to reforms of the financial system on a democratic basis it would devote special attention to the increase of direct taxes on the rich, such as succession duties, excess profits tax, etc. It concluded by promising to bring about a Constituent Assembly at the earliest possible date, by calling upon all the people to support the government, and warning the public that it would adopt the most energetic measures against any attempt at a counter-revolution.

In spite of the confidence expressed by the ministry in the army, reports of disorganization at the front which had been circulated for some time were now becoming definite. It was said that the discipline in the Baltic fleet was completely passing away under the new system; that at the front there was a decline of interest in the war; that at some points military duties had been abandoned; that in other parts there were no officers, the soldiers themselves having usurped the commands; in short, that at the front there was a virtual truce between the Germans and the Russians, and that the Russian troops were fraternizing with the enemy.

In other respects the situation was also grave. Strikes were occurring daily. The Kronstadt Committee of Workmen's and Soldiers' Delegates, under M. Lamanoff, declared its independence of the provisional government, endeavoring to set the example for local autonomy on the part of similar committees throughout the country. General Alexeieff resigned and was succeeded by General Brusilov. The dominant figure was the war minister, M. Kerensky, who sought to prevent the complete collapse of the army and the disorganization of the economic forces of the government. In this he was supported by the All Russian Council of Peasant Deputies who voted against a separate peace and for a vigorous war policy and sustained his efforts to restore discipline in the army.

The Situation at the Beginning of June. By June the situation in Russia began to seem in some respects less alarming to the Entente Allies. The Kronstadt movement was put down. The Socialist element in the Committee of Workingmen and Soldiers which had pressed for a separate peace and which at one time threatened to carry their point were not sustained by the majority. It had been feared that since the Committee of Workingmen and Soldiers as the representatives of labor and the army practically controlled the resources of the nation they would be able to carry out their programme in spite of the provisional government. The latter body had only a moral authority and the real seat of power was in the committee, but owing largely to the energetic efforts of certain members of the government, especially M. Kerensky, the plans of the extreme Socialists as represented by Lenine were thwarted. Finally the Congress of Workingmen and Soldiers gave up the idea of a separate peace and voted for the renewal of a military offensive. Apparently the Germans also recognized that their programme of a separate peace with Russia had failed. Toward the end of May and the beginning of June German newspapers published comments to that effect, and on the Eastern Front the Germans scattered among the Russian soldiers printed messages saying that the Germans were grateful to them for having stopped fighting and fraternized with them, for the German generals had thus been able to transfer large bodies of troops to the Western Front; they felt themselves strong enough in that quarter now and were ready to begin to attack the Russians. In the United States the chief of the Russian mission, Mr. Bakhmetieff, assured the American people that the provisional government was doing all that was possible to put the army on a sound footing; that it had won over all the leading men in the Soldiers' and Workingmen's party and that the mass of the people stood behind it; that all idea of a separate peace was given up; that Russia insisted on a peace without annexations or indemnities; that Russia believed that the defeat of the Allies would be the greatest misfortune that could befall her and that the Russian army would certainly do its part. The question of what was meant by no annexations and indemnities was widely discussed. Some contended that it was not meant to leave in Germany's hands territories acquired during the war or even Alsace-Lorraine. Mr. Vandervelde, the Belgian Socialist, interpreted the word annexation as not applying to the restoration of territory that Germany had unjustly seized. He said that to restore Alsace-Lorraine could not be regarded as an annexation on the part of France, but rather as a "disannexation" on the part of Germany.

During the last week in May M. Kerensky had paid a visit to the front where he was received with great enthusiasm by the soldiers. At the general congress of officers' delegates from the front on May 30 a resolution was adopted which, while approving the provisional government's ideal of brotherhood among the peoples, said that the only way to secure that object was to make the army a good fighting machine and to make an immediate offensive. At Odessa a meeting of delegates from the front declared that fraternizing with the enemy must come to an end and that those who continued it should be declared traitors and fired upon. The newspapers abounded in reports of the enthusiastic welcome to M. Kerensky at the front. At Kiev and Odessa he was received with especial warmth, in the latter place being carried on the shoulders of the crowd. In answer to questions asked by various military delegates M. Kerensky said that what had formerly appeared as the dying agony of the army was nothing but the struggle of the new Russian spirit, and that in spite of the destruction of the old discipline the real power of the Russian army was increasing every day, being based on a new and reasonable discipline. He declared that the fraternization with the enemy had ceased. On the other hand the Social Democratic papers were openly declaring that the army was tired of war and on the verge of starvation. Why carry on the war, they asked, in the interest of capitalism? Among the peasantry there was much unrest and there were signs that they would not wait for a Constituent Assembly to settle the land question. It was reported that the land was being confiscated everywhere by the communal authorities.

Other Events in June. On June 2 the government accepted the resignation of the Ambassador to France, M. Isvolski, former foreign minister. On June 8 the commercial and banking institutions held a meeting at which they pronounced against a separate peace. On June 12 the committee of the Duma charged with the duty of arranging for a Constituent Assembly met and drew up a plan. The Constituent Assembly was to draft a permanent constitution and to solve internal economic, industrial, and racial problems, and was to be chosen on the basis of direct, equal suffrage without distinction of sex. The government established local self-government in the districts throughout the country and a peasant administration elected by universal suffrage; promulgated a law giving Finland complete autonomy; and repealed all laws discriminating against the Jews. On June 17 it was announced that the Duma in secret session had voted for an immediate offensive on the part of the Russian troops, declaring that a separate peace with Germany or even prolonged inactivity on the front would be treason to the Allies and would never be pardoned by the future generations of Russia. At the same time the Congress of Workingmen and Soldiers decided to approve the expulsion from Russia of the Swiss Socialist, Robert Grimm, which had been ordered by the provisional government (see Switzerland). On June 17 a note was published requesting the Allied governments to meet at a conference in order to revise the agreements on the subject of the objects of the war with the exception of the London pact, which provided that no one of the Powers should conclude a separate peace. On June 30 the provisional government addressed an appeal to the people of Ukraine where the movement for independence and separation had plainly declared itself. See Ukraine.

Nikolai Lenine, the radical Socialist, made a sharp attack in the middle of June on the policy of the cabinet, especially as regarded the war. He contended that the new offensive urged by M. Kerensky, minister of war, was an act of treason directed against the interests of international socialism. To this the minister of war replied with an energetic defense of his policy, remarking that the government must show the international that it is a power to be reckoned with and that it is resolved not to submit to the dictation of an isolated group having no organization.

Abolition of the Duma. Upon the outbreak of the revolution the Duma ceased to exist as a legislative body. Just on the eve of its prorogation, at the beginning of the revolution, it appointed the Provisional Committee which supplanted it as an instrument of government. This Provisional Committee was regarded with suspicion by all the members of the Left. The Duma had in effect no power whatever. The real power in the new Russian state was in the hands of the Workmen's and Soldiers' delegates. The All-Russian Congress of Workmen's and Soldiers' Delegates which met in the third week of June passed a vote of confidence in the coalition government and then proceeded to the abolition of the Duma. All were agreed that while the Duma had played an important part in the first days of the revolution it was now useless and might even be made the instrument of a counter-revolution. The vote for its abolition was carried by 491 to 216, 41 not voting. The minority voted against the resolution because it was not severe enough and not because they wanted the Duma.

DISORGANIZATION OF THE GOVERNMENT. The following account of the utter disorganization in July under the new régime is based on dispatches to the London *Times*. By the middle of July it clearly appeared that the morale of the troops was shattered. In northeastern Galicia the 607th Russian regiment between Batkow and Manajow left the trenches of their own accord, thus forcing the other units to do the same and giving the enemy a chance to advance. This was due to a large degree to the influence of the Maximalists who called meetings of the troops in order to discuss the question whether the commands of the officers should be obeyed. Regiments refused to obey the commands (July 20) and the same lack of stability was manifested on succeeding days. To the southwest of Dvinsk the troops were reported to have shown complete disobedience toward their commanders and were continuing the retreat. This movement went on almost without interruption in spite of the Russian superiority of numbers. The Russian retreat was becoming general along a front of more than 150 miles. On July 17 the leaders of the Maximalist party had tried to provoke a mutiny in Petrograd among the troops in the garrison and for a time there was some disorder in the streets. The military governor issued an order calling upon the people not to leave their houses and directing the troops to restore order. In the night several of the Maximalist leaders addressed their followers in the streets. They informed them that the Petrograd committee had passed a resolution condemning the capitalist ministers and demanding their immediate resignation. They said that the government must pass into the hands of the Council of Workmen's and Soldiers' delegates. On July 18 there was continued disorder and scattered shots were fired in the streets. The Executive Committee of the Council of Workmen's and Soldiers' delegates supported the provisional government in its endeavor to suppress the disorders, admitting that this should be done before a new cabinet should be formed. By July 19 there was comparative quiet in the city again. On July 22 a council of ministers was held and certain changes were made. There was difference of opinion as to proclaiming Russia a republic, some members considering it necessary to do so at once but others holding that it was not an opportune time. The prime minister, Prince Lvoff, resigned chiefly on account of the difference of opinion between him and the Socialists on the land question. He was succeeded as prime minister by M. Kerensky. The provisional government immediately issued a proclamation warning the people against the hidden forces of counter-revolution and the danger of weakening at the front. At the same time the government sought to make clear by its foreign policy that the revolutionary army could go forward in the firm conviction that it was not fighting for any foreign objects. The government intended, in accordance with its declaration of May 19, to summon the Allies to an inter-Allied conference in August, in order to decide upon the Allies' foreign policy and to bring it into harmony with the principles of the Russian revolution. In this conference Russia would not only be represented by diplomats but by representatives of the people of Russia. The government had taken all the steps for the Constituent Assembly. The chief problem in the internal policy was to establish throughout the entire country self-government for the localities on the basis of direct, equal, and secret universal suffrage. On July 21 the prime minister, M. Kerensky, ordered the immediate dismissal of the Central Committee of the Baltic fleet and the election of a new committee; the arrest of the ringleaders at Kronstadt and on the battleships where mutinies had occurred; the removal at once from the Baltic fleet of all persons guilty of disobedience or inciting to disobedience. On July 23 the Council of Workmen's and Soldiers' delegates and the Council of Peasant Delegates passed a resolution saying that the country was threatened with military disaster and with anarchy, and that in view of the seriousness of the situation unlimited power be granted to the government to reëstablish order and discipline in the army and to wage relentless war against the anarchic elements in the country. The Russian Council of Workmen's and Soldiers' delegates issued a stirring appeal to the soldiers, whether at the front or at the rear, calling upon them to save the country against the German barbarians. The principal problem, according to M. Kerensky, was that of concentration and union. The provisional government, he said, had no other purpose than to defend the state against disruption and anarchy and to uphold the army. It was absolutely necessary to check any movement to overthrow the government and bring back the old régime. Meanwhile the demand of Ukraine had led to the resignation of the five Constitutional Democrats in the Ministry (see UKRAINE). Kerensky's powers at this time were unlimited. He adopted stringent measures against deserters from the army and against revolutionary agitators. He was supported by the Council of Workmen's and Soldiers' delegates and the All-Russian Council of Peasant delegates.

DISORGANIZATION OF THE ARMY. The entire breakdown of discipline was evidenced by the retreat in Galicia in the latter part of July. It was due to the belief of the soldier that he was first of all a citizen and that military measures should not be taken without his consent. The generals found they were unable to carry out any plans without the consent of numerous committees of the troops. Large bodies of them retired before the enemy without striking a blow. During the first week of August the retreat of the Russian troops continued till nearly all of Galicia was in the hands of the enemy. As an illustration of the numerous instances of the lack of discipline, the following incident was reported on August 5. In the town of Kalusz, which was captured by the Russians before the retreat, there had been left by the Germans a large stock of wine and spirits. Despite the commands of the officers the Russian troops broke open the barrels and drank the liquor, and the attempt to restore order failed in the face of a mob of 4000 men maddened by drink. During this debauch the Germans attacked the town and captured it.

At the beginning of August M. Kerensky resigned the office of prime minister, but the provisional government refused to accept his resignation and called a meeting of the representatives of all political parties, including the Duma, the Soviet, and the Council of Peasants. Kerensky, on being informed of the decision of the parties not to accept his resignation, issued the following statement:

"In view of the evident impossibility of establishing, by means of a compromise between the various political groups, Socialist as well as non-Socialist, a strong revolutionary government such as is required by the present threatening situation, I was obliged to resign. Friday's conference between the representatives of the principal Socialist, Democratic, and Liberal parties, after a prolonged discussion, resulted in the parties represented at the conference deciding to entrust me with the task of reconstructing the government. Considering it impossible for me in the present circumstances, when defeat without and disintegration within are threatening the country, to withdraw from the heavy task which is now entrusted to me, I regard this task as an express order of the country to construct a strong revolutionary government in the shortest possible time, and in spite of all the obstacles which might arise. I hope to find the solution of the problem in my unshakable conviction that the safety of the country and the Republic requires the renunciation of party quarrels and self-sacrificing work by all Russian citizens in the circumstances and conditions imperiously dictated by the stern necessity of carrying on the war, sustaining the fighting forces of the army, and reestablishing the economic strength of the state."

The party groups that had decided to recall M. Kerensky consisted of the Socialist Democrats, the Revolutionary Socialists, the Democratic Radicals, the Labor Union Party, the Popular Socialists, and the Cadets. M. Kerensky formed a new coalition ministry after negotiating with these five groups.

Meanwhile, General Korniloff, after painting the deplorable conditions in the army, requested the introduction of measures for the restoration of discipline. The new government accepted these terms, of which the main points were non-interference with the affairs of the chief command and the enforcement of punishments throughout the country for offenses. The whole country with the exception of the Maximalists who were still in evidence in the Soviet appreciated the necessity of restoring discipline in the army and the new cabinet gave that problem its chief attention.

THE MOSCOW CONGRESS. In view of the serious situation Kerensky decided not to wait for the Constituent Assembly but to call at Moscow on August 25 an "Extraordinary National Council" to consist of all parties for the purpose of effecting a compromise between the diverse elements and of reorganizing the military forces. The congress consisted of 2500 members, representing practically all the parties, but the Bolshevik or Maximalist element, which was to become powerful later, was not very strongly represented, because of the government's repressive measures. In his address, Kerensky repeated his declaration against a separate peace, and characterized the events at the front as shameful. And in regard to internal affairs he said that while certain nationalities which were part of the Russian state were none too friendly in their attitude, the provisional government, nevertheless, would give them all that had been promised to them and all that the Constituent Assembly should decide to grant; but it warned them if they tried to take advantage of the government's difficulties they would be checked. As to Finland he declared that the government would forcibly prevent the reopening of the dissolved Diet. He concluded by saying that the government would try to protect the army against corrupt influences and would continue to struggle against the Maximalists and others who tried to break down the discipline of the troops. At the next important session, August 27, General Korniloff, the army chief, declared that discipline must be restored to the army. He demanded that his request that the death penalty be restored should be granted. As illustrating the disorganization and lack of discipline he said that in August soldiers had killed four regimental commanders and other officers and that they had not desisted from these murders till they were warned that they would be shot if they continued. Moreover, one of the regiments of Siberian rifles which at the beginning of the revolution had fought with great bravery deliberately left the front at Riga and did not return to their positions until they had been warned that otherwise they would all be shot. The situation at the front was so bad that all Galicia, all Bukovina, and all the fruits of Russia's recent victories had been swept away and at several points the enemy had crossed the frontier and was threatening the southern provinces. The most important measures of reform that he demanded were as follows:

1st. Restoration of discipline in the army by increasing the power of officers and non-commissioned officers; 2nd. Improvement of the financial position of officers; 3rd. Limitation of the power of regimental committees which should be confined to the management of the economic affairs of the regiments. He then referred to the disorganization of the railways, saying that the condition was so bad that by November the army would cease to receive supplies. He quoted a dispatch from the commander-in-chief of the southwestern front saying that the shortage of breadstuffs amounted almost to a famine. The output of munition works had fallen during the period from October, 1916, to January, 1917, as much as 60 per cent for guns and shells and 80 per cent for aëroplanes. If this continued Russia would soon find herself in the same state as at the time of the great retreat in the spring of 1915. These revelations made a very strong impression both on the members of the conference and on the press. M. Kerensky's declaration was applauded but subsequently criticized as containing nothing new, as leaving the situation indeterminate, and, in general, as betraying uncertainty and a lack of force. During the last week of August continued reports were published of retreat from the front without orders, and the congress had hardly closed when the news came of the fall of Riga. See WAR OF THE NATIONS.

ORDER OF EVENTS IN SEPTEMBER. The threatened German attack upon Riga was clearly indicated on September 2 and on the following day the Germans entered the city. On September 5 the news came that the industrial crisis and the crisis of transportation was growing worse. On September 9 General Korniloff summoned M. Kerensky to deliver over to him the military and civil power. The latter refused and dismissed the general whom he replaced by General Kembolsky. The conflict between the provisional government and Korniloff became acute by September 11 and on the following day all the ministers placed their resignation in the hands of Kerensky in order to leave him complete liberty of action though they remained provisionally in power. On September 13 the provisional government named Kerensky commander-in-chief in order that he might withstand the attempts of Korniloff. On the following day the Korniloff movement was definitely checked. It had advanced to within thirty miles of the capital. Kerensky, in addition to the powers of commander-in-chief, now assumed those of a dictator. On September 16 the provisional government was reconstituted in the form of a directorate under the presidency of Kerensky and it proclaimed that Russia was a republic. This proclamation was placarded at Petrograd on September 17. On September 27 a Democratic conference, called by the Workmen's and Soldiers' Council, was held with a view especially to determine the form that the government should take until the Constituent Assembly should meet. It consisted of 1200 members of whom the Bolsheviki or ultra-radicals were in the majority. In a speech by M. Kerensky the German menace in the Gulf of Finland was pointed out.

The Korniloff Movement. The following more detailed account of some of the events briefly mentioned in the preceding paragraph is based on dispatches to the London *Times* and on other reports published during the year in the newspapers and reviews, but the accounts were often conflicting and an authoritative record of the events was not available.

On September 8 General Korniloff, the Cossack commander-in-chief of the Russian armies, called on the prime minister, M. Kerensky, to resign and make way for a new government which should consist of a dictatorship under the rule of the commander-in-chief; thereupon the prime minister dismissed General Korniloff. M. Kerensky's account of the affair was to the effect that General Korniloff had sent a member of the Duma demanding that he, the prime minister, should turn over to the general all the civil and military powers in order that the latter might, according to his own judgment, set up a new government. This demand was confirmed by telephone conversation with the general afterwards. The government, thinking it necessary to cut short any attempts to encroach on the supreme power, ordered, first, General Korniloff to surrender his functions as commander-in-chief; and, second, the city and district of Petrograd to be declared in a state of war.

General Korniloff's side of the matter was presented in an open letter to the government explaining why he refused to resign the chief command. He said at this crisis of the country's existence when the way to both capitals is almost open to the enemy the provisional government, instead of taking energetic and decisive action, was frightening the people by reports of a counter-revolution. Its government was slack and incapable. Supported by the commanders of all the fronts, he had refused to resign and he demanded that the provisional government should come to his headquarters and draw up along with him a plan for a government of national defense.

On September 12 M. Kerensky assumed the chief command of the Russian armies and General Alexeieff, the former commander-in-chief, was appointed chief of staff. In announcing this change, M. Kerensky declared that the foolish attempt at military mutiny had been put down without bloodshed. On September 11 a notice had been sent to the army generally and to the naval committees that General Korniloff at the head of troops was moving on the capital for the purpose of deposing the provisional government and seizing the power. It called upon the persons and authorities addressed to refuse obedience to any orders of General Korniloff or of the traitors who had joined him. Meanwhile the capital had been placed under martial law. The Cadet ministers resigned and there was evidence among the higher classes of sympathy with General Korniloff's attempt, as promising the restoration of order. On September 10 M. Kerensky received a deputation from the Cossacks which declared that it believed it to be a patriotic duty to prevent civil war and to try and settle the conflict between the general and the government. At the same time it was announced that the cavalry sent by General Korniloff were within thirty miles of Petrograd. On September 15 it was learned that General Korniloff had surrendered to General Alexeieff who had placed him under guard and on the same day the provisional government issued a manifesto proclaiming Russia a republican state. On the next day it announced that, while awaiting the definite constitution of the cabinet, the affairs of state were entrusted to a council of five of whom the chief was M. Kerensky, premier, and the other members were Terestchenko, Foreign Affairs; General Verkhovsky, War; Admiral Verderevsky, Marine; M. Nikitin, Posts and Telegraphs. An order of the day was issued at the same time addressed to the army and the fleet, calling upon them to cease all political disputes and do everything in their power to restore the army to a fighting basis, stop the arrests of commanders, and cease forming voluntary detachments on the pretext of fighting the counter-revolution. It also published an explanation of the rules in regard to the military commissaries saying that these officers were servants of the provisional government who were to establish discipline in the army on the basis of democratic revolutionary principles. There were to be a chief military commissary at army headquarters and special commissaries for the different units. Further manifestoes and declarations were made to the purport that order must be reëstablished in the state and the fighting spirit in the army.

The Cossacks. In March the Cossack troops in Petrograd had joined the revolution and their act was approved at once by their kinsmen of the Don. On April 21 the provisional government issued a proclamation saying that the historic rights of the Cossacks to the land could not be violated. Soon afterwards reports of disorders among the Cossacks and of the seizure of their lands became frequent and on April 29 a congress of the Cossack government was called especially for the purpose of settling the great question of the land. This question among the Cossacks was altogether different from the problem that presented itself in the rest of Russia. There common ownership of land had become a familiar idea and among the peasants was almost an article of faith. In the Cossack provinces, however, while there was common ownership of land, there was a definite line of cleavage between the peasant and the Cossack. All the land was the property of the Cossack government which in those provinces was a military organization. A portion of the land was assigned to groups of villagers and cultivated by Cossack farmers. Another portion was assigned to officers or retired soldiers and became their private property. The rest of the land known as the reserve was rented to the peasants; who, being almost equal in number to the Cossacks, paid each year about 1,200,000 rubles as rent. The interests of the peasants and of the Cossacks therefore were opposed and the problem consisted in finding an arrangement that would avert civil war. The Cossacks felt safe under the first provisional government, but when that collapsed and a Socialist coalition took its place they became suspicious and from that time a conflict continued to grow between the Don province and the capital. Aside from merely economic measures the Cossacks resented the growing lack of discipline in the army which the first coalition government seemed unable to check. They prided themselves on the fact that there were no desertions among the Cossack troops. They were the most compact and orderly force in the state and grew more united as Russia fell more and more into confusion. On the other hand, the government at Petrograd suspected them of disloyalty to the revolution although they had supported it both at the capital and in their own province. On June 30 the Cossack congress declared that they would support the provisional government against the foreign foe and against internal anarchy and that the government could surely rely upon the Cossack regiments. Then came the July offensive which ended in a failure. The Cossacks now supported Korniloff's efforts to restore order. Toward the end of August they prepared to send to the new conference at Moscow representatives who would declare for the integrity of Russia and support a Coalition government, demand the reorganization of the army, and protest against socializing the land. They thus took up a more conservative position after the failure in Galicia than they had taken before and they were represented by General Kaledin who had been elected Hetman of the Don Cossacks on June 30 and whose views were characterized by Kerensky as ultra-conservative. It was announced on September 11 after Korniloff had made his ultimate demands upon the prime minister that Kaledin had gone over to his side and was threatening to cut off Moscow and Petrograd from the south. The provisional government declared him a traitor and ordered his arrest. On the other hand the provincial government of the Don denied the treason of Kaledin or the intention of the Cossacks to rise against the government. The condition in the following month was confused. In the Don province Kaledin was accused of starting a mutiny, whereas, as noted above, the union of the Cossack government in Petrograd was trying to bring about a compromise between Kerensky and Korniloff. In certain quarters Kerensky was criticized for not having dealt more wisely with the Cossacks, who, it was said, had shown that they were not against the revolution by their union with the Cadets. It was pointed out that from July on Kerensky's only real enemies were the Bolsheviki and that in the circumstances he ought to have entered into an alliance with the moderate element as represented by the Cossacks and the Cadets.

New Coalition Ministry. The Democratic Congress of September 27 left the impression that the masses had little enthusiasm for the revolution and little respect for the Petrograd authorities. Kerensky declared that the only means of saving the situation was a coalition government. The outcome of the conference was an agreement upon such a government and upon a preliminary parliament with advisory functions. The latter could interpellate the government and the government must reply, but was not responsible to it. It was designed to last until the Constituent Assembly should meet in December. There was danger that the Socialists would insist that the Ministry should be composed exclusively of their representatives, but this was averted by Kerensky's threat to resign. As finally constituted the new Ministry was composed of six Socialists, four Constitutional Democrats, one independent, and six members from other parties. Its programme as announced in the press was as follows: Increase of the fighting power of the army and navy; suppression of anarchy; and the calling of the Constituent Assembly as soon as possible. In October the growing strength of the Bolsheviki was manifest and they made it clear that Kerensky's government had completely lost the confidence of the radical element throughout the country.

The Fall of Kerensky. On November 7 the Bolsheviki, who constituted the extreme left of the Soviet, revolted under the leadership of the well-known Socialist, Lenine, and overthrew the Kerensky government. The preliminary parliament was dismissed, several ministers were arrested, and the headquarters of the general army staff were captured. Kerensky effected his escape and down to the close of the year there was uncertainty as to his whereabouts. The direction of the movement was in the hands of the Military Council of Workmen's and Soldiers' Delegates, under the guidance of Lenine and Trotzky. The first official announcement of the revolt declared that the Kerensky government had been overthrown without bloodshed and that the Petrograd Soviet of the Workmen's and Soldiers' Delegates welcomed the change and proclaimed the authority of the revolutionary committee until a government of Soviets should be established. It then set forth the following programme: 1st. The offer of an immediate democratic peace. 2nd. The immediate transfer of the landed estates to the peasants. 3rd. The transmission of all authority to the Soviets. 4th. The calling together of the Constituent Assembly after an honest election. Later the new government addressed to all the provincial councils of Workmen's and Soldiers' and Peasants' delegates proclamations declaring that all power belonged to the Soviets; that the government commissaries were relieved of their office; and that the death penalty that had been re-established by Kerensky at the front was abolished. Later M. Trotzky, who, with Lenine, was a leader of the movement, declared that the Workmens' and Peasants' conception of democracy had united the ranks of the army. He accused Kerensky of trying to break the power of democracy by the aid of the Cossacks and he said that opposition to Kerensky was opposition to the landlords, the middle class, and the Korniloffs. On November 9 a new cabinet was formed by the council with Nikolai Lenine as prime minister and Leon Trotzky as secretary of foreign affairs.

There were many interpretations of the fall of the Kerensky government, of which the most common one was at first that it had been overthrown by the extremists or Bolsheviki. It was, however, due rather to the failure of the Kerensky government to meet the demands of the people generally for an early peace. Among the masses the Entente Allies were believed to be as imperialistic as the czar had been and in overthrowing czarism they held that they had broken with the foreign policy that czarism had embarked upon. The Russian democracy, said they, could not and would not carry out a foreign policy of imperialism, and they insisted that the new government should bring about peace. Kerensky, after being in power seven months, had failed to do this. He had not succeeded in making the Allies re-state their war aims. Thus Russia, if it continued with them as before, seemed to be carrying out the foreign policy of imperialism which it had repudiated. This drove many away from the government and finally Kerensky found the majority against him in the preliminary parliament. On November 6, when Kerensky demanded a vote of confidence after a debate on foreign policy, he failed to obtain it, and the Extreme Left carried its resolution blaming the government for its weakness in foreign affairs. Dr. David Soskice, who had been Kerensky's private secretary, declared the main causes of his fall to be the following: (1) The Korniloff mutiny, which most effectively prepared the way for the victory of the Bolsheviki in November; (2) the great anxiety and fear which Kerensky felt lest a general massacre of officers should take place both at the front and in the rear; (3) the lack of energy, if not direct disloyalty, among some of the higher officers in the military defenses of Petrograd; and last, but not least, the attitude of the Allies to Kerensky's government and their neglect of the public opinion of the Russian democracy, upon which Kerensky's administration was based.

The Bolshevik Government. The first step in carrying out the Bolshevik programme in regard to peace was taken by Lenine on November 8 when he telegraphed to all the belligerent governments a proposal for three months' armistice. Meanwhile the long threatened publication of the secret treaties signed by the former Russian government with the Allies had begun and were producing a deep impression on the public. As to the internal policy the new government indicated the course it was about to take by a series of decrees transferring property. One of them empowered municipal authorities to seize any houses whether inhabited or not and allow citizens who possessed no adequate dwelling to occupy them. Another decree declared that all factories had passed into the possession of the workmen. But the principal measure was the decree which undertook to solve the land question. It declared all private ownership of land to be henceforth null. The land was to be nationalized and to be turned over to the people who cultivated it. Local committees were to dispose of all large estates and all lands belonging to the state, to the church, etc., until the Constituent Assembly should meet; and mines, forests, and waterways of national importance were to pass into the hands of the state. Smaller forests and waterways were to become the property of the village communes. Early in December the Trotzky-Lenine government issued a demand upon the Allies to re-state definitely their war aims within seven days. In presenting this ultimatum they were thought to be counting upon the Allies' refusal, for in that case they could tell the public that the Allies would not restate their aims because their aims were really imperialistic. Thus Russia would be justified in breaking with them and in making immediately a separate peace. Meanwhile the movement for an armistice continued. Gen. Dukhonin, who held the chief command, having refused to offer an armistice, was dismissed, and was succeeded by Ensign N. Krylenko. The Russian terms for the armistice were published on December 5. They included two conditions: First, that German forces should not be sent from the Russian front to the front of the Allies; second, that the German troops should retire from the islands that they held in Russian territory. The Germans declared such conditions unacceptable. Nevertheless, the German government had expressed its willingness to discuss terms, and on December 3 had announced that an armistice prevailed from Pripet to the south of the Lipa River and that arrangements for its extension over the whole front were in progress. In the negotiations that were going on, Germany, Austria, Bulgaria, and Rumania were represented. On December 8 Trotzky announced that hostilities had been suspended for a week, and finally on December 14 the armistice was signed at Brest-Litovsk. It was to last twenty-eight days and could be extended. It provided that peace negotiations should begin at once. At the close of the year they were in progress.

The Situation at the Close of the Year. In November and December the country was a prey to internal dissensions. Ukraine again declared its independence. Finland did the same. Gen. Kaledin, the leader of the Cossacks, supported by Gen. Korniloff, proclaiming the purpose of saving the country, declared war against the Bolsheviki. Americans and other foreigners hastened to leave the country. Later the Cossacks and Ukrainians joined forces against the Bolsheviki and Siberia declared its independence. Neither Russia's Allies nor neutral countries recognized the new government. In December the Constituent Assembly met and was found not to return the great majority to the Bolsheviki which they had expected. The lack of a preponderant majority and the discord between the parties deprived it of all power.

Bessarabia. After the outbreak of the Russian revolution there was a movement in Bessarabia for autonomy, as in Ukraine (q.v.), and in May a national Moldavian committee was formed which put forth the following programme: Religious and political independence; free use of the Moldavian tongue; a more just distribution of land among the peasants; prohibition of foreign colonization; and the expenditure in the province of the revenue raised there. They did not demand separation from Russia. Their programme was at first opposed by the Ukraine which claimed the province a part of the new Ukrainian state, but later (August 8) on receiving the protest of Bessarabia the Ukraine government excluded it from its jurisdiction. The Central Rada of Ukraine afterwards admitted Bessarabia's right to independence and in November its official organ favored alliance and coöperation between the two new states.

The Charges Against Soukhomlinoff. The charges against Soukhomlinoff which were published in the papers in June, 1917, attracted general attention as explaining the long series of Russian military disasters. In general they were that despite the urgent demands of the generals in the field for supplies and munitions he remained indifferent and inactive. On several occasions in October, 1914, he was informed by the generals that they could not continue operations if provisions and ammunition did not arrive and there was soon a great scarcity of guns. It was said that the reënforcements sent to the front had only one gun for each two men and later even fewer. Finally whole detachments of troops were sent to the seat of war without any arms whatever. By the middle of October, 1914, the number of guns lacking was placed at 870,000, and as there was a shortage of machine guns there was soon a dearth of munitions, especially in Galicia, where certain elements had to abandon their position on account of having nothing to shoot with. The generals declared in their charges that all the Russian reverses from Lodz in November, 1914, down to August, 1915, were due to the lack of munitions, which weakened the defense by making reënforcements impossible and even necessitated the reduction of many regiments to three battalions. Soukhomlinoff's reply was that he had faithfully followed the programme as to arming and equipping the army, which the high committees of national defense had worked out in 1904 after the Russo-Japanese war, and he referred the failure to the lack of financial resources, saying his demands for necessary money had been systematically refused.

See United States and the War.

RUTGERS COLLEGE. A non-sectarian institution for the education of men, at New Brunswick, N. J. In the fall of 1917 there were 461 students and 82 members of the faculty. Volumes in the library numbered 91,000. Productive funds in 1917 amounted to $960,000 and total income from all sources to about $300,000. The college was founded in 1766. President, W. H. S. Demarest, D.D., LL.D.

RYDER, Albert Pinkham. An American painter, died at Elmhurst, L. I., March 28, 1917. He was born in 1847 at New Bedford, Mass., and studied under the engraver, William E. Marshall, and at the National Academy School and in Europe. He never sought publicity for his work, and when he did exhibit, which was seldom, his pictures did not attract the public because of a certain unreality or ideal quality. He viewed nature through the eyes of a visionary, or a poet, and did not object to the appellation, "the last of the Romanticists." He was, in fact, the last important survivor of the notable group of landscape painters, led by George Inness. It is said that all his work was done laboriously, a method that would account for the comparatively small number of canvases that he produced. In the Metropolitan Museum of Art are "Bridge," "Curfew Hour," and "Smugglers' Cove," and the Brooklyn Institute possesses eight examples. A few collectors became ardent admirers of Ryder, especially a group of Canadian connoisseurs. His "Temple of the Mind," one of his best works, is in Montreal. Originally the wooden panel that this picture was painted on had, on the reverse side, a fine "Moonlight," by the same artist, but these two subjects were sawed apart when Thomas B. Clarke was the owner. Other of his pictures, privately owned, are, "Jonah," "The Flying Dutchman," "Macbeth and the Witches," "The Race Track," "Moonlit Cove," "Siegfried and the Rhine Maidens," "Interior of Stable," and "Resurrection." Mr. Ryder was elected Associate of the National Academy in 1902 and Academician in 1906, and he was a member of the National Institute of Arts and Letters.

RYE. The average annual world's rye production is about 1,750,000,000 bushels, but as the belligerent countries are the principal rye producers statistics with reference to this crop in 1917 were very incomplete. In six out of eight European countries from which statistics were received by the International Institute of Agriculture at Rome, the production was lower than in 1916, and in all of them it was below the average production for the five years, 1911-15. As estimated by the Department of Agriculture, the production of the United States was 60,145,000 bushels, on 4,102,000 acres, as compared with 48,862,000 bushels and 3,212,000 acres in 1916.

The average yield was 14.7 bushels per acre which was lower than the average acre yield of 1916 and the average for the five years, 1911-15. The average farm value, December 1, 1917, was 166.3 cents and on this basis the crop was valued at $100,025,000, while the crop of the year before, when the corresponding bushel value was 122.1 cents, was valued at only $59,676,000. The acreage, production, bushel value, and total crop value of 1917 all constituted record figures, but the average yield per acre quite generally had been surpassed. The area sown to rye in the fall of 1917 for the 1918 crop was reported as 6,119,000 acres, of which 2,345,000 acres were in North Dakota, the only State having over a half million acres.

The Canadian production was estimated at 4,240,000 bushels, valued at $6,059,000. This production was greater by about 45 per cent than that of the year before, which was due to an increase in acreage, the average yield per acre for the two years being about the same. In common with wheat and other cereals, the international and domestic trade in rye of most countries, and especially those engaged in the war, was subject to governmental regulation to assure their own bread supplies and to keep them from going to any extent to opposing nations. Most countries also fixed prices for ordinary transactions as well as for requisition for army use. Germany in March, 1917, fixed the price at $1.66 per bushel, Austria in August at $1.55, France in October at $1.55, Italy in August at $2.13, the Netherlands at 92 cents, etc. These prices were changed as conditions demanded or a definite increase per month was allowed as the commercial season progressed.

SAFE OCCUPANCY. See Fire Protection.

SAFETY AT SEA. The United States Steamboat-Inspection Service was active in spite of the fact that its officials were assigned to various war duties in addition to their regular work of inspection. The Steamboat-Inspection Service was called upon by the United States Shipping Board to examine interned German vessels after seizure by the government, and reported on the damage done by the officers and crews of these vessels. The Inspection Service furthermore cooperated with the United States Shipping Board in recruiting the merchant marine, and also in facilitating late commerce, which was greatly expanded on account of the war conditions.

There were reported by the Steamboat-Inspection Service 257 accidents resulting in the loss of life, or an increase of ten over the record of the previous year. Of these disasters the following were the more significant:

The freight steamer *Frederick* sailed from New York in January, 1916, loaded with munitions. She was unheard from except in February a bottle containing nine messages from members of the crew was washed ashore at the Orkney Islands. The crew of thirty-three men was believed to have been lost and the vessel to have sunk from some unknown cause.

On July 4, a collision took place between the schooner *Emma Lord* and the seagoing barge *Harry Morse*, anchored in lower Mobile Bay during a hurricane. Both vessels foundered, eight lives were lost.

On July 13, 1916, in a hurricane, the barge *South West* and the barge *North West* were lost, together with five of the crew of the former.

July 14, 1916, freight steamer *Ramos*, with coal from Philadelphia to Cartagena, Colombia, was lost in a hurricane with eleven of her crew.

August 16, 1916, the freight steamer *Admiral Clark* and twenty of crew were lost during a hurricane off San Antonio, Tex.

August 17, 1916, steamer *Pilot Boy* foundered off the coast of Texas; six of crew were lost.

October 20, 1916, freight steamer *James B. Colgate* and *Merida* foundered in a severe gale in Lake Erie and twenty-four of the crew of the former and the entire crew of twenty-three of the latter vessel were lost.

The towing steamer *T. A. Scott, Jr.*, was sunk on November 17, 1916, by a collision with the German merchant submarine *Deutschland*, which she was convoying to sea. The entire crew of five men on the *Scott* perished.

The steamer *Rambler*, on November 20, 1916, was destroyed, along with the crew of four men, by a boiler explosion at Commercial Wharf, Brooklyn, N. Y.

The freight steamer *Maryland*, a vessel sent to the Atlantic seaboard for freight service, was supposed to have foundered about 300 miles off New York during a severe storm in the latter part of December, 1916. The entire crew of twenty-six was lost.

In a severe storm on November 26, 1916, the freight steamer *Orleanian* left New York for Malta and was supposed to have foundered with her entire crew of thirty-six men.

On February 5, 1917, the barge *Iowa* with a crew of five men being towed by the steamer *Covington* was sunk in a northwest gale off Highland.

On March 16, 1917, the towing steamer *Bertha*, in tow of the steamer *Chief*, broke loose and was supposed to have foundered with her crew of nine men.

On March 16, 1917, the steamer *Vigilancia*, bound from New York to Archangel, was torpedoed by a submarine without warning, in latitude 48° 57′ N., longitude 9° 34′ W., and in lowering the lifeboats, fifteen of the crew were swept overboard and drowned in the rough sea.

On March 21, 1917, the steamer *Healdton* was torpedoed without warning by a submarine in the North Sea, and nineteen of the crew were lost either by being unable to get away from the vessel or being capsized in the lifeboats.

April 1, 1917, the steamer *Aztec*, bound from New York to Havre, France, was torpedoed by a submarine off Oushant Island on the French coast. Twenty-nine of the crew perished.

On April 26, 1917, the steamer *Vacuum*, without cargo, leaving Liverpool, was struck by a torpedo from a submarine and sunk with twenty-two of the crew.

On May 1, 1917, the steamer *Rockingham* was torpedoed by a submarine without warning in latitude 55° 10′ N., longitude 12° 30′ W. and sunk with a loss of two of the crew.

On May 16, 1917, the steamship *Hilonian* was struck by a torpedo on the port side and sunk in about three minutes, with four of the crew being lost.

On June 12, 1917, the steamer *Moreni*, after a battle lasting two hours, was sunk by a submarine south of Tabasca Island on the southern coast of Spain.

On June 30, 1917, the steamship *Christopher Columbus*, while passing out of the Milwaukee River stern first, struck a high steel structure on the wharf, causing a large water tank to topple to the deck and killing fifteen passengers. This accident was caused by high water and a strong current.

During the fiscal year ending June 30, 1917, the United States Steamboat Inspection Service reported that 317,095,171 passengers were carried on steam vessels that are required by law to report the number of passengers carried. Of this number 71 passengers were lost, so that for each passenger lost 4,466,129 passengers were carried in safety. The total number of lives lost on all ships subject to the United States Inspection from all causes, passengers and crew, was 592.

One of the accidents of the year was the loss of the British transport *Aragon* in the Mediterranean, sunk on December 30, at practically the same time and place as the transport *Osmanich* was lost.

ST. CHRISTOPHER. See St. Kitts and Nevis.

ST. HELENA. An island in the south Atlantic Ocean; a British possession. Area, 47 square miles; population, 3520. The capital and only town is Jamestown (1439 inhabitants). Steamers arrive from England every four weeks, the time from Southampton being seventeen days.

ST. KITTS AND NEVIS. A presidency of the Leeward Islands colony (q.v.), consisting of the islands of St. Kitts (or St. Christopher, 67 square miles), Nevis (50 square miles), and Anguilla (35 square miles), with their dependencies. Basseterre, the capital, in St. Kitts, has over 8000 inhabitants; Charlestown, the principal town in Nevis, about 1500.

ST. LOUIS. See City Planning.

ST. LUCIA. A British West Indian island; one of the Windward Islands colonies. Area, 233 square miles; population in 1911, 48,637. The capital is Castries, with 6266 inhabitants; Soufrière has about 2300. Most of the inhabitants speak a French patois. The chief products are sugar, cacao, logwood, spices, rubber, and limes.

SAINT MARY'S FALLS CANALS. See Canals.

SAINT-PIERRE AND MIQUELON. Islands off the southeastern coast of Newfoundland, which, with a number of islets, constitute a French colony. Area, 241 square kilometres (93 square miles); population in 1911, 4209.

ST. THOMAS. See São Thomé and Principe.

ST. VINCENT. A British West Indian island; one of the Windward Islands colonies. It occupies between 140 and 150 square miles, and had in 1911, 41,877 inhabitants (estimate of March 31, 1914, 45,605). Kingstown, a port of registry situated at the southwestern extremity of the island, has about 4300 inhabitants. Other towns are Georgetown and Barrouallie. St. Vincent is of volcanic origin. The Grenadines, a chain of small islands, chief of which is Bequiæ, are comprised in the government of St. Vincent. Products for export are sugar, rum, cacao, arrow root, ground nuts, and spices.

SAKALIN. An island off the eastern coast of Siberia. It is crossed by the fiftieth parallel of north latitude, the part north of that line being Russian and the part south Japanese. The Russion portion forms a province, with an estimated area of 14,668 square miles and a population, as calculated for January 1, 1915, of 34,000. Karafuto, the Japanese portion, has an estimated area of 95,194 square miles and a population, as calculated for December 31, 1916, of 95,134. Japanese colonization and timber exploitation are encouraged by the government. See Karafuto.

SALMON. See Alaska.

SALONIKI. See War of the Nations.

SALVADOR. A Central American republic, situated on the Pacific Coast east of Guatemala. The capital is San Salvador.

Area, Population, etc. The estimated area is 21,160 square kilometres (8170 square miles). The population in 1917 was probably about 1,300,000. Nearly two-thirds of the people are mestizos and nearly one-sixth Indians. In 1915, births numbered 51,058, and deaths, 37,447; in 1916, 46,568 and 41,750. The population of San Salvador is estimated at 66,800 (or, with environs, 75,000); Santa Ana, 48,000 (59,400); San Miguel, 25,000 (30,000).

Elementary instruction is free and nominally compulsory. Children of school age (six to fourteen) in 1914 were reported to number 274,000. In 1916, there were enrolled in the public elementary schools 47,371 pupils. The total number of schools in that year (not including a few professional schools) was 989, with an enrollment of 57,555. There is a national university at San Salvador.

Production, Commerce, etc. The most important crop is coffee; other products of the soil are corn, sugar cane, cotton, cacao, beans, peanuts, yams, rice, indigo, tobacco, rubber, and balsam of Peru. Gold and silver mining are of considerable importance.

Import and export values, computed in American money, have been reported as follows:

	1913	*1914*	*1915*	*1916*
Impts. .	$6,178,544	$4,958,624	$4,022,167	$5,823,619
Expts. .	9,928,723	10,796,495	10,563,871	11,604.751

The principal export is coffee, reported to amount in 1916 to 357,567 metric quintals, valued at 23,373,936 pesos silver; of this export, 29.4 per cent went to France, 20.5 to the United States, and 20.4 to the Netherlands. The chief imports are cotton goods, hardware, drugs and medicines, machinery, and flour. In 1916, imports from and exports to the United States were valued at $3,586,508 and $4,102,410 respectively; United Kingdom, $1,338,700 and $67,253; France, $316,136 and $2,779,179.

Railway in operation, 264 miles. Telegraphs, 2412 miles of line, with 215 offices. Post offices, 139.

Finance. The legal standard of value is silver. The silver peso, which was worth about 42 cents in 1916, advanced rapidly in 1917, with the rise in price of silver, being quoted at about 71 cents on October 1. Converted to American money, revenue and expenditure in 1915 were $4,250,000 and $5,291,000 respectively. Reported revenue in 1916 was 12,779,085 pesos, nearly two-thirds being derived from customs. The budget for the fiscal year 1917-18 placed the estimated revenue at 14,153,950 pesos and the estimated expenditure at 14,060,413 pesos; estimated customs receipts, 8,828,250 pesos. Public debt, as reported for January 1, 1917, 27,950,383 pesos, of which 15,002,635 pesos foreign debt and 12,947,748 pesos internal debt.

Government. The legislative power is exercised by the National Assembly, a single chamber of 42 deputies elected for one year by direct vote. The president and vice-president are elected for four years by direct vote. President in 1917, Carlos Meléndez, inaugurated March 1, 1915. Vice-president, Alfonso Quiñónez Molina. See Volcanoes.

SALVARSAN. Owing to the difficulty of obtaining this drug from Germany, the Federal Trade Commission issued licenses to three firms to manufacture and sell arsphenamine, the chemical name of salvarsan, the orders for licenses to be subject to stringent stipulations made by the commission. The three firms licensed were the Dermatological Research Laboratories of Philadelphia; Takamine Laboratory, Inc., of New York; and Herman A. Metz Laboratory of New York. The right to fix prices was retained by the commission, and while this right had not been exercised in 1917, some of the licensees stated that the drug would be sold at $1 per dose to the army and navy, $1.25 per dose to hospitals, and $1.50 per dose to physicians. The Trade Commission's action was taken under Section 10 of the Trading With the Enemy Act. The Public Health Service prepared rules and standards for testing and were to supervise the making of the drug. See Spirochete Bronchitis.

SALVATION ARMY. There were in the United States in 1917, 967 corps and outposts, 2848 officers and cadets, 53,483 converts, 200,678 indoor meetings with an attendance of 7,988,051, 154,728 open air meetings with an attendance of 18,362,992, 2423 life-saving scouts meetings, with an attendance of 34,478, 4,250,568 *War Crys* published, 86 hotels for men and women, 3 boarding houses for women, accommodations for 6994, 1,875,642 beds supplied, 455,762 meals supplied, 63 countries and colonies occupied, 1889 schools and institutions.

After the entrance of the United States into the war the Salvation Army began to actively participate in it, doing relief work, etc., among the American troops at home and in France, and among the troops of the Allies. In the United States the war work was carried on by 152 officers and employees, 2 chaplains, 17 hutments, 12 ambulances, 26 rest and reading rooms. There were also 190 War Service League Chapters in operation. These are affiliated with the Red Cross. The statistics for the international war work include 637 officers and employees, 38 chaplains, 155 hutments, 32 ambulances, 200 rest and reading rooms, 15 naval and military homes, and 68 hostels.

SALZBURG. A crownland of Austria. Area, 2762 square miles. Population at census of December 1, 1910, 214,737 (0.75 per cent of the Austrian total). Austrian subjects in 1910, 208,562; of these, German, 99.73 per cent. Catholics formed 98.47 per cent of the population. The capital is Salzburg (population in 1910, 36,188). The crownland has a diet of thirty-nine members and is represented by seven members in the Austrian Reichsrat.

SAMOA. A group of islands in the Pacific Ocean about 14° S. The islands east of 171° E. belong to the United States; those west of that meridian, to Germany. Area of the German islands, about 994 square miles; population, about 40,000. Area of the American islands, 77 square miles. The most important of the American islands is Tutuila, with an area of 55 square miles and a population (February 1, 1912) of 7251; the other American islands have about 1800 inhabitants. Pago-Pago, in Tutuila, is the most valuable harbor in the South Seas and an important naval station. See GERMAN SAMOA.

SAMOS. One of the Anatolian islands. Formerly it was a principality, autonomous, but tributary to the porte in the annual sum of 200,000 piasters. In March, 1913, the island was occupied by Greek troops, and from that time administered through a Greek prefect. The area is stated at 468 kilometres (181 square miles). Recent population figures were not available, but in 1902 the inhabitants, who are mostly Orthodox, numbered 53,424, exclusive of some 15,000 natives of Samos living on the Anatolian mainland. The capital is Vathy, with about 8000 inhabitants.

SAMPLE FAIRS. See EXPOSITIONS.

SANBORN, FRANKLIN BENJAMIN. An American journalist, humanitarian, and author, died in Westfield, N. J., February 24, 1917. Of an old colonial family, he was born at Hampton Falls, N. H., in 1831, and was educated at Phillips Academy, Exeter, and at Harvard, where he graduated in 1855. Until 1863 he had charge of a school at Concord, Mass., which Ralph Waldo Emerson had asked him to take. During part of this time he was active as an Abolitionist, serving on the Massachusetts State Kansas Committee and ardently supporting John Brown. He helped to operate the "underground railroad" by which slaves were enabled to reach Canada and was suspected of complicity in the raid on Harper's Ferry in 1859. The next year he was saved by neighbors from the hands of five men, one a Boston constable, after he had refused to go to Washington to testify regarding slave raids. From 1863 to 1867 he edited the Boston *Commonwealth*, and thereafter till 1914 was contributing editor of the Springfield *Republican*, to which he sent a weekly letter up to the time of his death. His zeal on behalf of the unfortunate and oppressed was recognized by Governor Andrew, who, as early as 1863 appointed Mr. Sanborn secretary of the first State Board of Charities in the United States. Of this board he was chairman in 1874-76, and he was State inspector of charities from 1879 to 1888. He helped to found the American Social Science Association, the National Prison Association, the National Conference of Charities, the Clarke School for the Deaf, the Massachusetts Infant Asylum, and the Concord School of Philosophy, and at one time or another he was president or secretary of most of these. He lectured in the School of Philosophy at Concord, where he made his home, and also at Cornell, Smith, and Wellesley. Mr. Sanborn was an authority on Thoreau, wrote several books on him, the last of which was *Final Life of Thoreau* (1915), and edited five volumes of his manuscript. He wrote also biographies of John Brown, Dr. S. G. Howe, Alcott, Emerson, and Dr. Earle; a history of New Hampshire, and *Recollections of Seventy Years*, besides contributing to the *Proceedings* of the Massachusetts Historical Society and editing letters of Paul Jones, J. H. Payne, Mrs. Shelley, and Thomas Love Peacock. Consult his writings and O. G. Villard's *John Brown*.

SANITATION. See articles, GARBAGE AND REFUSE DISPOSAL; SEWERAGE AND SEWAGE TREATMENT; WATER WORKS. The Bibliography in this field included: Whipple, *State Sanitation* (Cambridge, Mass.), a review of the work of the Massachusetts State Board of Health for half a century, with reprints and abstracts of scores of special papers and reports; and Wood, *Sanitation Practically Applied*.

SANTO DOMINGO. The capital of the Dominican Republic. The name "Santa Domingo" is often used for the country itself. See DOMINICAN REPUBLIC.

SÃO THOMÉ AND PRINCIPE. Two islands off the coast of French Equatorial Africa, in the Gulf of Guinea, near the equator, and about 125 miles off the coast of Africa. They were discovered in 1471 and now constitute a province of the republic of Portugal, under the administration of a governor, who resides in the city of São Thomé. Area, 939 square kilometres (363 square miles); population estimated to be 68,220, consisting of natives, 23,650; contract laborers, 35,535; child workers, 6985; Europeans, 2000; Chinese, 50. Cacao is the principal product of the islands, their output constituting a large part of the world's supply.

Nearly all the work of the cacao plantations is done by contract labor. The wages paid are very small, about 3.60 escudos a month (escudo = $1.08 at par). Laborers are contracted for in Angola and other near-by African states. The area devoted to cacao trees in the two islands approximates 125,000 acres. The average production per tree is 2.2 pounds, and a tree yields for twenty years before it must be replaced. The average production per acre is 250 pounds. During the five years from 1912 to 1916 the annual production was as follows: 1912, 497,329 sacks; 1913, 535,808 sacks; 1914, 569,422 sacks; 1915, 471,024 sacks; and 1916, 629,450 sacks (sack weighs from 132 to 140 pounds). In 1916 shipments of cacao from São Thomé to Lisbon totaled 582,678 sacks, from Principe to Lisbon, 31,704 sacks, from São Thomé to Funchal, 12,318 sacks, and from Principe to Funchal 2750 sacks.

Total imports in 1915, 4,190,780 escudos; exports, 6,268,619. Revenue in 1916-17, 1,415,816 escudos; expenditure, 1,415,816.

SARAWAK. The northwestern portion of the island of Borneo; a British protectorate. The area is about 42,000 square miles; population, about 500,000—no census has ever been taken. The capital is Kuching (25,000 inhabitants); Sibu has a large Chinese population, mostly traders, and the Rejang River has a raft population of some 90,000. Chinese are employed in the gold mines of Paku and the Batang Lupar Residency.

Rajah, Sir Charles Johnson Brooke (born 1829); acting, Charles Vyner Brooke (Rajah Muda), the heir (born 1874).

SASKATCHEWAN. One of the Prairie Provinces of Canada. It is situated between Alberta, on the west, and Manitoba, on the east, and extends from Montana and North Dakota, at 49° N., to the Northwest Territories, at 60° N. It is separated from Alberta by the meridian of 110° W. Capital, Regina. The estimated area is 251,700 square miles, of which 8318 water. At the census of June 1, 1916, the population was 647,835 (363,787 males, 284,048 females), as compared with 492,432 in 1911, 257,763 in 1906, and 91,279 in 1901. Population of the cities and larger towns June 1, 1916: Regina, 26,127; Saskatoon, 21,048; Moosejaw, 16,934; Prince Albert, 6436; Swift Current, 3181; North Battleford, 3145; Weyburn, 3050; Yorkton, 3144; Estevan, 2140; Melville, 2100.

The provincial government is administered by a lieutenant-governor, appointed for five years by the governor-general of Canada; he acts through an executive council, or responsible ministry. The legislative power is exercised by an assembly of fifty-four members elected for five years. An act of 1917 extends the suffrage to women in provincial and municipal elections. In the House of Commons of the Thirteenth Canadian Parliament, elected December 17, 1917, Saskatchewan has sixteen members. The lieutenant-governor in 1917 was Richard Stuart Lake, appointed October 6, 1915, in succession to George W. Brown. Premier, W. M. Martin. See CANADA.

SATTERLEE, FRANCIS LE ROY. A widely known specialist in gout and rheumatism. He graduated from the New York University in 1865 and the medical school of the same institution three years later. He was professor of physics, chemistry, and metallurgy at the New York College of Dentistry for fifty years, retiring as emeritus professor several months ago. He was the author of a treatise on rheumatism and works on gout which were used as textbooks in medical colleges. He was an honorary member of the Society of Arts, London, a Fellow of the Academy of Medicine, and a member of the American Medical Association, and the Pathological Society. He was seventy years old and died in New York City on November 12, 1917.

SAULT STE MARIE CANALS. See CANALS.

SAVINGS BANKS. There are two general classes of savings banks, commercial and government or postal. Commercial savings banks in the United States are divided into two classes, mutual and stock. The mutual banks are found almost exclusively in New England and the Eastern States, while the stock savings banks are numerous throughout the Middle West and South. On June 30, 1917, according to the report of the Comptroller of the Currency, there were 1807 mutual and stock savings banks in operation in the United States, exclusive of the stock savings banks in the States enumerated in the article STATE BANKS (q.v.). These did not, of course, include the savings department which during the last few years had been very extensively established by national banks and trust companies.

There were 622 mutual savings banks with aggregate resources of $4,811,000,000, including loans and discounts of $2,368,401,000, and bonds and other securities valued at $2,131,688,000. Their liabilities comprised surplus of $321,793,000 and individual deposits of $4,422,489,000. The 1185 stock savings banks had total resources of $1,127,893,000, of which $763,770,000 were in loans and discounts and $159,480,000 in bonds and other securities. Their deposits equaled $995,532,000; their capital $69,170,000; and their surplus $30,585,000.

POSTAL SAVINGS BANKS. The Federal Postal Savings System established in 1911 has grown rapidly. Accounts may be opened by any one ten years of age; no one may have more than one account; the accounts of married women may not be drawn upon by their husbands; and amounts of deposits may not be disclosed by post-office employees. Deposits bear 2 per cent a year, but no interest is paid for less than a full year. Deposits may be exchanged for registered or coupon United States postal savings bonds, bearing interest at 2½ per cent, in denominations of $20, $100, and $500. The postal savings funds are deposited in approved banks giving interest of not less than 2¼ per cent; funds are when possible deposited in local banks. There were no changes in the Postal Savings Law in 1917.

On June 30, 1917, there were 674,728 depositors on the books of the system with $131,954,000 to their credit. This was an average deposit of $195.57. During this year there was an increase of nearly 12 per cent in the number of depositors, of over 53 per cent in the amount of deposits, and of over 37 per cent in the average balance per depositor. There were in all 7161 depositories, including 6423 post offices and 738 branches and stations. The funds were deposited in 5583 banks, including 3486 national banks, 1274 State banks, 242 savings banks, 568 trust companies, and 13 private banks. The ten States having the largest number of depositors and the amount standing to their credit were as follows: New York, 239,475, $40,925,953; Pennsylvania, 58,882, $13,693,951; Illinois, 40,204, $9,265,211; Ohio, 39,347, $8,943,607; Massachusetts, 33,012, $5,621,535; New Jersey, 27,628, $4,716,871; California, 23,755, $4,727,383; Michigan, 23,609, $5,821,425; Connecticut, 19,173, $3,606,098; and Washington, 17,258, $4,100,664.

The fifteen offices with the largest deposits on September 30, 1917, and amounts of deposit in them were as follows: New York, $29,764,908; Brooklyn, $9,536,745; Chicago, $6,988,704; Detroit, $4,207,184; Boston, $3,011,264; Pittsburgh, $2,714,794; Cleveland, $1,885,022; Philadelphia, $1,741,985; Portland, Ore., $1,625,750; Milwaukee, $1,514,964; San Francisco, $1,362,151; Newark, $1,349,413; Seattle, $1,328,457; St. Louis, $1,293,435; Toledo, $1,189,310.

Postal savings bonds were issued in exchange for deposits during the fiscal year to the amount of $1,606,760. Over 92 per cent of these bonds were in the registered form, indicating permanent investment. Interest on postal savings funds together with small miscellaneous receipts amounted to $2,703,000; interest paid to depositors, $1,274,000; losses due to fire, burglaries, etc., $3577; excess of interest received over interest paid and losses, $1,475,000.

Postal savings facilities were extended to Alaska in 1916, when eight offices were made available; in 1917 four additional offices were opened. Total deposits in Alaska on June 30, were $332,947. The average deposit in Alaska was $407, being the highest in any State or Territory. During the year a publicity campaign was conducted to bring the benefits of the system to the attention of all classes of the population. Circulars were printed in English and twenty-four foreign languages; and millions of post cards setting forth the principal facts were sent directly through post office channels.

SAVING STAMPS. See FINANCIAL REVIEW.

SAXONY. A European kingdom; also a grand duchy and a Prussian province. The kingdom of Saxony is one of the more important constituent states of the German Empire. Its capital is Dresden. The kingdom has an area of 5789 square miles, which is somewhat smaller than the combined land area of Connecticut and Rhode Island. Its population increased from 1,194,000 in 1816 to 2,337,000 in 1864, 4,202,216 in 1900, and 4,806,661 in 1910 (census of December 1). The average annual increase from 1816 to 1910 was 1.48 per cent; from 1900 to 1910, 1.53 per cent. In 1910, communes having 2000 inhabitants or more aggregated a population of 3,507,414. Evangelicals numbered 4,520,835 (94.05 per cent) in 1910; Roman Catholics, 236,052 (4.91 per cent); other Christians, 25,574 (0.53 per cent); Jews, 17,587 (0.37 per cent). Saxony has a bicameral parliament. The king in 1917 was Friedrich August III, who was born May 25, 1865, and succeeded his father, King Georg, October 15, 1904.

The grand duchy of Saxony, or Saxe-Weimar, is a constituent state of the German Empire. Capital, Weimar. Area, 1394 square miles. Population at the 1910 census, 417,149, as compared with 362,873 in 1900 and 280,000 in 1864. In 1910, 94.40 per cent of the population was Evangelical, and 4.79 per cent Roman Catholic.

The Prussian province of Saxony has an area of 9756 square miles. Population in 1910, 3,089,275, as compared with 2,832,616 in 1900 and 2045 in 1864. In 1910, 91.61 per cent of the population was Evangelical, and 7.53 per cent Roman Catholic. The capital is Magdeburg.

SCANDINAVIAN LITERATURE. The interest in the war mentioned in the preceding YEAR BOOK was less evident in 1917; fewer works dealt directly with it or with problems relating to it, but we can see indirectly its effects on the literature of the year. The reflective mood was becoming slightly more apparent, and there was a prevalence of problems—particularly the social problem—as themes.

DANISH. *Drama.* Helge Rode's *Det store Forlis* (*The Great Wreck*) takes its name from the wreckage of life in the pursuit of power and honor. It reminds us of Tolstoy's *The Living Corpse.* In O. Münster's *Højere Magter* (*Higher Powers*), a problem play of the old type, the mutual love of father and daughter triumphs over their religious differences.

Fiction. Danish literature suffered a great loss by the death of Jakob Knudsen. In *Guds Venner* (*God's Friends*), Karl Gjellerup returns to the old time novelistic technic with its intrigues and involved situations. The author is particularly successful in depicting pathos. Gunnar Gunnarson's new Icelandic story, *Varg i Veum* (*The Wolf in the Sanctuary*) is alive with local atmosphere, but not as strong as his other works. In *Clara van Haags Mirakler* (*The Miracles of Clara van Haag*) Johannes Buchholtz proves himself a master both of humor and pathos, but the book fails to make the impression of an organized whole. Henrik Pontoppidan's *Favsingholm* is the last of the series *The Kingdom of the Dead*, which began with Torben and Jytte. It depicts the struggle of church and state to wrest away from the people of the twentieth century the liberty which its leaders gained for them in the nineteenth. Kristian Jensen's *Riget* (*The Kingdom*) and Thit Jensen's *Jyske Historier* (*Jutland Stories*) are collections of short stories from Jutland life.

Science, Literature, etc. Otto Jespersen's *Nutidsprog hos Børn og Voksne* (*Contemporary Speech Among Children and Adults*) is of special interest because of the light it throws on child speech. Carl Lassen's book about *Fröding* is a good introduction to that author.

NORWEGIAN. *Poetry.* *Himmelvarden* (*The Heavenly Lighthouse*), a cycle of poems in Landswaal by Olav Aukrust, touches the theme of Goethe's *Faust*—the striving upward. As Goethe praises action so Aukrust praises will. Bjørnson's verse romance *Arnljot Gelline* was translated into English by William Morton Payne.

Fiction. In John Bojer's *Den store hunger* (*The Great Hunger*) we notice the influence of Bergsonian philosophy and recent French literature. It is full of optimism and expresses the author's conviction that man's will for good is all powerful. Harry Søjberg's *Foran livets port* (*Before Life's Gate*), depicting peasant life, combines certain romantic features with that careful portrayal of men and nature characteristic of the realistic school. Barbra Ring's *Under sejl* (*Under Sail*) is centred around a woman who by her envy and selfishness makes life unhappy for herself and others. In Katharina Gjesdahl's *Den store avgjørelsen* (*The Great Settling*) the memory of former loves all but separates husband and wife. *Det gode samvite* (*The Good Conscience*) by Olav Duun is a realistic story of peasant life.

Science, Literature, etc. Francis Bull's *Fra Holberg til Nordal Brun* (*From Holberg to Nordal Brun*) treating Norwegian intellectual life from 1750 to 1770 is practically a continuation of the author's earlier work *Ludwig Holberg as an Historian.* In Konrad Limonsen's *Den* *moderne mennesketype* (*The Human Type of To-day*) we see the influence of Walther Rathenaus. The author contends that the present generation is too much bent on mastering the externals and neglecting the deepening of the intellectual and spiritual life.

Swedish. *Poetry.* In his collection *Sommarnatten* (*The Summer Night*) Arvid Mörner interprets the life of the peasants and the fishermen. The poet shows a strong love for the places and the people he portrays. In Bo Bergman's *Elden* (*The Fire*) we feel that the melancholy expressed comes directly from the author's own heart. Also of a subjective character are Jacob Tegnengren's *Dikter* (*Poems*), a seventh collection, lyrics touching nature and love. Bertil Malmberg translated a number of Schiller's poems, his own works, also, *Atlantis* and *Enblödande jord* (*A Bleeding Earth*) show strong influence of the German poet, particularly his idealism of English translations. Charles Wharton Stork's *Anthology of Swedish Lyrics* is particularly deserving of mention.

Fiction. One of the favorite subjects of novels for the year was the old time manor with all its lore and traditions. It is the manor itself rather than any single individual that is the hero. *Brovallahans* by Biger Mörner extends over a period of three hundred years, while Hedvig Svedenborg's *Ulfvegården* covers a comparatively short period, only giving us fragments now and then of some of the earlier history. Among stories with a sociological tendency we may mention Ture Janson's *De ensamma svenskarna* (*The Lonely Swedes*), an arraignment of the upper class for their indifference toward the working men, and Martin Koch's *Guds vackra värld* (*God's Beautiful World*), which depicts with accuracy and sympathy the life of the poor and criminal class in Stockholm. Juhani Aho's *Fredseremiten* (*The Peace Hermit*) is a strong plea for world peace. Friends of Peace gather around the hero from several countries, but when war is declared they fall into two hostile groups, thus causing the hermit to despair of his peace idea. He soon, however, regains his faith, thinking that if one individual believes in universal peace, it must come. Of great interest to the English reader is the translation of Selma Lagerlöf's works.

Science, Literature, etc. Albert Nilsson's *Svensk romantik* (*Swedish Romanticism*) shows the prevalence of Platonic Philosophy in a number of romantic writers. John Landquist's *Gustaf Fröding* devotes a great deal of space to Fröding's insanity and its influence on his literary activity. Martin Lamm's *Svedenborg* traces the growth of Swedenborg's philosophical and religious ideas, showing how the latter directly grew out of the former.

SCHILLER, Friedrich. See Music, *Orchestras.*

SCHOOLS. See Education.

SCOTLAND. A division of the United Kingdom, forming the northern part of the island of Great Britain, with adjacent isles. The area is 30,405 square miles; land area, 29,796 square miles, which is slightly smaller than the land area of the State of Maine. Population, 4,760,904, according to the 1911 census; 1915 estimate (subject to revision), 4,785,598. See Great Britain.

SCULPTURE. See Painting and Sculpture.

SEALS. See Alaska; Fish and Fisheries.

SEA PLANES. See Naval Progress; Aëronautics.

SEED. See Agriculture.

SEISMOLOGY. See Earthquakes.

SELANGOR. A state on the western coast of the Malay Peninsula; one of the Federated Malay States (q.v.).

SELECTION. See Zoölogy.

SELECTIVE DRAFT. See Military Progress; United States and the War.

SELIGMAN, Isaac Newton. A prominent banker in New York City. He was born in New York City on July 10, 1855, and was killed by a fall from his horse on September 30, 1917. He was graduated from Columbia University in 1876. While at this institution he was prominent as an athlete and student. He immediately entered the banking firm of his father and rose to be one of the foremost bankers in the Wall Street district. He was widely interested in charities, and was a trustee of many charitable institutions as well as financial organizations. At the outbreak of the war he opposed the formation of Jewish regiments on the grounds that a Jew should be a Jew only in religion, and an American in all else.

SELOUS, Frederick Courteney. A British hunter, explorer, and soldier, killed when leading an attack on Bhobeho, German East Africa, January 4, 1917. He was famous for his adventures and for his understanding of the African natives. H. Rider Haggard took him as the prototype of Allan Quatermain in *King Solomon's Mines, She,* and other stories where the hero's experiences were closely patterned on those of the intrepid explorer. Selous had English, Scotch, and French blood in his veins, and on his mother's side traced descent from Robert Bruce. He was born in London in 1851 and after attending Rugby was sent for further studies to Neuchâtel, Switzerland, and then to Wiesbaden, Germany. At twenty he went to South Africa, thence to Matabeleland, and for eighteen years he was virtually buried in the dark continent, traveling and hunting. He made a notable collection of natural history specimens, flora and fauna, which were sent to the British Museum. In 1890, for the British South Africa Company, he accompanied the pioneer expedition to Mashonaland as guide, a service for which his knowledge of the people and country eminently fitted him. With short visits in England between enterprises, he participated in the first Matabele War in 1893 and in a later native insurrection. His rank was that of captain of Royal Fusiliers. Although sixty-three years old at the outbreak of the European War he volunteered for service with the Legion of Frontiersmen, a Boer organization (he had always been a warm supporter of the Boers), and in 1916 received the Distinguished Service Order for gallantry. Captain Selous helped to outfit Colonel Roosevelt for his African hunting trip, and accompanied him on part of it. From the Royal Geographical Society he received the Cuthbert Peek grant, the Back premium, and the Founder's gold medal. He had a home in Surrey, England. It was reported that before he received the fatal wound in his last engagement, he had already been hit once but continued to encourage his men. Selous wrote: *A Hunter's Wanderings in Africa; Travel and Adventure in South East Africa; Sunshine and Storm in Rhodesia; Sport and Travel, East and West; Recent Hunting Trips in*

British North America; African Nature Notes and Reminiscences.

SEMBRICH, MARCELLA. See MUSIC, *Artists*, Vocalists.

SENATE. See UNITED STATES AND THE WAR.

SENEGAL. One of the constituent colonies of the government-general of French West Africa (q.v.). The capital is Saint Louis.

SERBIA. A kingdom of eastern Europe, divided from Hungary by the Danube and the Save, and bordered by Bulgaria on the east, by Albania and Montenegro on the west, and by Greece on the south; one of the Balkan states. Belgrade (Biograd, the "white fortress") is the capital. Serbia, for the present a lost nation, served as the match in the fingers of Germany and Austria-Hungary for the lighting of the European conflagration. When Belgrade was occupied by Austro-German troops (October 9, 1915) and Usküb by the Bulgarians (October 22), after Kragujevats, Nish, Prizrend, and Monastir had fallen (November-December) the Serbian government was removed to Corfu.

AREA AND POPULATION. The table below shows area by departments, population according to the census of December 31, 1910, population as calculated December 31, 1911, and density (1911) per square kilometre:

Department	*Sq. km.*	*1910*	*1911*	*D.*
Belgrade*	12	89,876	92,288	123
Belgrade	2,025	155,815	158,378	..
Kragujevats	2,295	189,025	192,124	84
Krajina	2,909	112,142	113,128	39
Krushevats	2,710	167,371	170,853	63
Morava	2,900	203,638	206,547	71
Nish	2,558	198,768	201,762	79
Uzhitse	3,288	146,763	149,112	45
Pirot	2,419	112,314	114,115	47
Podrinje	3,551	238,275	242,029	68
Pozharevats	4,157	259,906	262,208	63
Rudnik	1,569	85,340	87,187	56
Smederivo	1,277	143,216	144,829	113
Chechak	3,798	138,911	141,267	37
Timok	3,196	149,538	150,965	47
Toplitsa	2,839	110,218	112,610	40
Valjevo	2,459	158,648	160,873	65
Vranja	4,342	252,937	257,087	59
	† 48,303	2,911,701	2,957,207	61

* City. † 18,650 square miles.

According to religions the censused population was divided into Greek Catholics, 2,881,220; Roman Catholics, 8435; Mohammedans, 14,335; Jews, 5997; Protestants, 799; and other religions, 915. Belgrade had 90,890 inhabitants; Nish, 24,949; Kragujevats, 18,452; Lescovats, 14,266; Pozharevats, 13,411; Vranja, 11,439; Pirot, 10,737. Bitolj (Monastir) had in 1910 a population of 59,856; Skoplje (Uskūb), 47,384; Prilip (Perlepe), 21,783; Prizrend, 21,244; Prishtina, 18,174.

By the terms of the treaty of Bucharest (July 25, 1913), Serbia gained, as a result of the wars in the Balkans, the eastern part of Novibazar, Kossovo, and Central Macedonia. The new territories have an area estimated at 39,000 square kilometres, and are composed of the following territories: Bitolj, with 345,759 inhabitants; Ishtib, unknown; Debar, 82,476; Kavadar, 97,763; Kumanovo, 166,939; Novibazar, 133,401; Plevlje, 62,601; Prishtina, 239,386; Prizrend, 227,425; Skoplje (Uskūb), 153,293; Tetovo, 157,249.

NATURAL RESOURCES; PRESENT CONDITIONS. It would be idle to republish old statistics for production, commerce, and so forth. These may be found in previous YEAR BOOKS and will give a clear idea of the former relative European importance of this stricken nation.

The most fertile and densely populated among the Balkan states, Serbia is essentially an agricultural country, and stock raising has been the most important occupation of the people. Tilled fields alternate with oak-covered hills which maintain great herds of swine. Of the total area 1,865,392 hectares were under cultivation, and 1,546,000 under forests. Cereals, plums in large quantities, and vines were grown. There were 965,208 cattle in the country at the last live stock census, 3,808,815 sheep, 152,617 horses, 836,544 swine, and 627,427 goats. The mineral resources include coal and lignite, copper ore, and gold. According to the *Deutsche Balkan Zeitung*, of Sofia, an expert who had been looking over the Serbian coal fields to find opportunities for investment, declared that hard and soft coal and lignite are found in great abundance. There were but 14 mines operating in 1910. The number had increased in 1914 to 22, but because of lack of miners, machinery, enterprise, and capital no further development seems to have taken place. The expert referred to in the *Zeitung* found 10 other localities in which mines could be successfully operated, besides a rich field of coal near Usce, along the bed of the river Iber. Statistics show that the production of soft coal and lignite doubled between 1900 and 1910, 51,320 tons of anthracite coal, 16,622 tons of soft coal, and 7899 tons of lignite having been mined in the latter year. After the occupation of Serbia, all its mines were in the hands of German army engineers who so thoroughly organized the work upon them that it was generally believed the output had been materially increased.

According to advices received in London, February 28, 1917, by the Royal Serbian legation, Austria was doing with the Serbians what Germany had long been doing with the Belgians. A reign of terror was said to prevail in the parts of Serbia under Austria-Hungary. Deportations of Serbians on a large scale had been begun by the Austrian military authorities in the conquered territory. Coöperating with the Austrians were the Bulgarians, and, to a smaller extent, the Germans. During September more than two thousand native Serbians were deported. On the Serbian territory occupied by the Austro-Hungarian authorities, murders were said to have been carried out simply in accordance with a list in which certain anticipated "crimes" entail the death penalty; which list had been drawn up by the military commander-in-chief, the Archduke Frederick, growing longer from day to day, and including an ever-increasing number of offenses punishable by death. By public executions and by exposing the bodies, Austria-Hungary was reported to be endeavoring to intimidate Serbia, and by the removal of its best and most prominent men she was trying to deprive it of all its leaders and advisers. In the months following the deportations grew to alarming proportions. In all, about 60,000 Serbians were said to have been deported. All males above fourteen were exiled by the Teuton-Bulgarian authorities. The exiled Serbians were employed by their enemies in digging trenches and work of similar character. They were often exposed to the fire of their own brothers and Allies. In addition to this, they succumbed in large numbers to disease and exhaustion, for the conditions under which they were deported and brought to their destination were described as unimaginably inhuman.

The fugitive king is Peter Karageorgevitch, grandson of the celebrated Kara George, and son of Alexander Karageorgevitch, elected king (June 2, 1903 o. s.) under the name Peter I. See War of the Nations; Relief for War Victims.

SETTLEMENTS, National Federation of. See Charities.

SEVENTH DAY ADVENTISTS. See Adventists.

SEVENTH DAY GERMAN BRETHREN. See Brethren, Church of the.

SEWAGE TREATMENT. See Sewerage.

SEWANEE. See South, University of the.

SEWERAGE AND SEWAGE TREATMENT. The outstanding features of the year 1917 were the provision of sewerage facilities for army camps and the continued study of methods of sewage treatment, particularly activated sludge. At the sixteen army cantonments, and at some of the National Guard and other camps, sewerage systems were provided within a few weeks' or months' time to remove the liquid wastes from 30,000 to 40,000 men. Standard plans and specifications were proposed in Washington and then adapted to meet the local conditions at each camp. In the collective systems, commonly accepted practice as to pipe conduits, manholes, etc., was used. Where treatment was necessary, one-story septic tanks of special design were installed. In some cases this was sufficient. In others, secondary treatment was provided, consisting of either intermittent sand or sprinkling filters, or else chlorination for disinfection. Rarely, the three methods named were combined. No treatment whatever was given at thirteen of the thirty-two cantonments and camps. See *Engineering News-Record*, September 15, 1917, for detail drawings of standard septic tank and sprinkling filter and for method of disposal in use at thirty-two camps.

Broader Specifications for Materials. After a prolonged struggle between the vitrified clay and cement interests, Los Angeles, Cal., opened its specifications so as to permit the use of concrete sewers. Detroit went still further. For years it had allowed brick only to be used in sewer construction. On recommendation of its engineers, backed by the Detroit Bureau of Governmental Research, the specifications were opened to a variety of other materials, but segmental blocks of vitrified clay and shale were still not permitted.

Sewage Treatment. The most common American practice still was to employ Imhoff tanks (two-story septic tanks) for sedimentation, sprinkling filters for oxidation and chlorination for disinfection, choosing one or a combination of two or of all three processes to suit local conditions. Contact beds or intermittent sand filters were sometimes considered more suitable than sprinkling filters. Fine screens were being introduced to remove a portion of the solids instead of settling tanks of the plain or Imhoff septic type. Such screens were recommended in 1917 for Cleveland, Ohio, and Indianapolis, Ind. They were in use in connection with tanks at Rochester, N. Y., and a number of smaller American cities, and were being installed to treat a small portion of the sewage of New York City. They were extensively used on the continent of Europe.

Activated Sludge. This process of aërating sewage which contains an accumulation of sludge in order to produce clarification, a non-putrefactive affluent, and a reduction of bacteria continued to be studied in the United States and Europe. A few permanent plants were installed in England, Canada, and the United States. During the year the working-scale plants at Milwaukee, Wis., and Cleveland, Ohio, were continued in operation, as well as plants at several localities for the treatment of stockyards sewage. Experimental studies on a smaller scale were being made at Worcester, Mass., New Haven, Conn., Pasadena, Cal., and Moscow, Russia. At the latter place a number of other methods were being studied. At New Haven, the installation included activated sludge, Imhoff tanks, Miles acid tank for the recovery of grease and fertilizer material and disinfection by liquid chlorine. At Syracuse, parallel tests of activated sludge and continuously aërated gravel filters were being made.

Plans for an activated-sludge plant were being drawn at the close of the year for Brockton, Mass. Though there was much still to be learned as to the best method of dewatering the final sludge, the practicability of converting the sludge into fertilizer, and the cost of this method of treatment, yet the activated-sludge process must be considered as full of promise. An extended review of the process at large, and as studied at Milwaukee, Wis., was presented to the American Public Health Association in October by T. Chalkley Hatton, chief engineer of the Milwaukee Sewerage Commission (see *Engineering News-Record*, November 1, 1917, for lengthy abstract).

SEX DETERMINATION. See Zoölogy.

SHACKLETON EXPEDITION. See Polar Research.

SHAW, John Banks. An English Wesleyan leader, and theologian, died in March, 1917, at Headingly. He was born in Sheffield in 1835. After receiving his education at Birmingham, he went as a missionary to southern India in 1856 and remained there till 1864. Then, for some sixteen years, he worked in various cities of England and Scotland. For thirty years, till his retirement in 1910, he held a professorship at the University of Leeds. Edinburgh conferred on him the degree of D.D. in 1903, the year after he served as president of the Wesleyan Conference. Dr. Banks made a number of translations of German theological works, and wrote *Manual of Christian Doctrine, The Science of Religion* (Fernley Lecture), *Development of Christian Doctrine* (2 vols.), *Tendencies of Modern Theology, Central Questions of Faith, The New Testament Books.*

SHEEHAN, William Francis. A noted corporation lawyer and at one time the lieutenant-governor of New York State. He was born in Buffalo, N. Y., on November 6, 1859, and died March 14, 1917. For six terms he was a member of the New York State Assembly and at one time its speaker. In 1891 he became lieutenant-governor, being the youngest man to hold this position in the history of the State. He was educated at St. Joseph's College in Buffalo and was admitted to the New York State Bar in 1880. In 1904 he was the manager of Alton B. Parker, the Democratic candidate, for the presidency of the United States. In 1911 he made a memorable but unsuccessful fight in the New York State Legislature for the position of United States Senator. He had the statewide Democratic support, but was defeated by an active minority, James A. O'Gorman being the successful compromise candidate.

SHEEP. See STOCK RAISING AND MEAT PRODUCTION.

SHEEP SCAB. See VETERINARY MEDICINE.

SHELL SHOCK. The true nature of shell shock has been a matter of debate ever since the war began. Dr. Morton Prince, of Boston, as a result of extensive study at the front and in the base hospitals in France and England, voices the consensus of opinion that true shell shock does not differ in any way from the ordinary traumatic neuroses observed in certain individuals after railway accidents, earthquakes, etc. In other words it is nothing but traumatic hysteria, although its manifestations may vary all the way from neurasthenia to profound paralysis and anesthesia. Cases of true shell shock must be differentiated from those of an organic nature due to injury of the brain and spinal cord, resulting from physical injuries, gas poisoning, or the sudden compression and rarefication of the air during heavy artillery firing. Prince believes that shell shock should be more properly described as "shell fear" or "shell funk," the causative factor being undoubtedly psychic, that is, fear, acting on a mind already prepared by its surroundings for the final results. There is a widespread belief among soldiers that shell shock is due to a physical injury of the brain, resulting from concussion, and that they may be seriously injured in mind and body and may be more or less permanently incapacitated. Many soldiers are consequently in a state of continuous terror during the course of a bombardment by the enemy. In the way of prevention, Prince suggests a more careful elimination of neurasthenic and psychasthenic individuals from troops engaged in actual fighting. Fighting units should be instructed in the nature of the disease and it should be impressed upon soldiers that shell shock is merely a form of hysteria.

SHIP BILL, ARMED. See UNITED STATES AND THE WAR.

SHIPBUILDING. It would be little exaggeration to say that next to the actual raising and providing of food for the inhabitants of the world, the shipping and shipbuilding industries were the most vital both in connection with the war and the well-being of mankind in general, during the year, 1917. Indeed ships were required not only by the belligerents, but also by the neutrals, as an important element in their struggle for existence, not to mention commercial supremacy, and when in 1917 Germany began the unrestricted submarine campaign against British and other Allied shipping, as well as against neutrals that transgressed her arbitrary orders and regulations, even greater interest attached to the matter. During the early period of this unrestricted warfare, from twenty to thirty large ocean-going vessels were sunk by the Germans, and it was said that the war was becoming a race between the Allies in building ships and the Germans in sinking them.

At this time, Great Britain was making great efforts to increase both naval and merchant tonnage, particularly the latter, and to a less extent shipbuilding was being carried on by France and the other Allies. With the entrance of the United States into the war, shipbuilding, which had been for two years previously an important consideration, now became a vital matter.

EMERGENCY FLEET CORPORATION. On April 17, 1917, the Emergency Fleet Corporation was established by the United States government under the provisions of the Shipping Board Act of the previous year. This corporation was charged with the immediate duty of making a large commercial merchant marine of standardized and other ships in the shortest possible space of time and under the most modern ideas of efficiency and economy in working with speed as the primary object. The first contract for new construction was let on April 27, 1917.

Gen. George W. Goethals, U. S. A., builder of the Panama Canal, was made managing director of the Emergency Fleet Corporation, while William Denman was the chairman of the Shipping Board. The work of the Shipping Board and the Emergency Fleet Corporation during the year was involved in prolonged controversy and criticism. There was lack of coöperation between the personnel of the two boards, with the result that a series of changes took place during the year. An early feature of the work was the announcement by Mr. Denman of a shipbuilding programme of 1000 wooden ships. This proposal at once aroused widespread criticism as being impossible of fulfillment and not in accord with modern ideas of shipbuilding or merchant shipping generally. It was argued that there were not enough skilled ship carpenters to build such ships at short notice, that there would be difficulty in getting out the timbers, and even when built they would be far less efficient and economical than steel vessels. Gen. Goethals publicly expressed his doubt of the feasibility of the wholesale wooden ship construction and instituted a comprehensive programme for building steel vessels. In an address on May 25 before the American Iron and Steel Institute, Gen. Goethals stated that he would construct 3,000,000 tons of steel ships in eighteen months, but that in his opinion, the original wooden ship scheme of the Shipping Board was hopeless.

This and other points of difference led to a controversy between Chairman Denman and Gen. Goethals and resulted in the resignations of both at the request of the president. Mr. Denman was succeeded on July 27 as chairman of the Shipping Board by Edward N. Hurley of Chicago, who thus became responsible for the prosecution of the construction plans of the Shipping Board. As general manager of the Emergency Fleet Corporation, Rear Admiral Washington L. Capps, Naval Constructor, U. S. N., succeeded Gen. Goethals.

Besides these shifts in heads, there were numerous changes in the Shipping Board, and John A. Donald of New York remained the only one of the original appointees at the end of the year. Bernard N. Baker of Baltimore, a practical shipping man, early had resigned, and was succeeded by Raymond B. Stevens of New Hampshire. John B. White of Kansas City, Mo., who resigned at the same time as Mr. Denman, was succeeded by Bainbridge Colby of New York, in July. Charles R. Page of San Francisco took the place of Theodore Brent of New Orleans. On November 23, Admiral Capps resigned and to his place Rear Admiral Frederick R. Harris, chief of the bureau of yards and docks, U. S. N., was detailed as general manager of the Emergency Fleet Corporation. It was stated that Admiral Capps asked to be relieved on account of physical disability, but there were rumors that he as well as other engineers had found the work uncongenial on account of difficulties inherent to the organization and its personnel. When the organization of the Emergency Fleet Corporation was changed on November 12, a number of engineers were added to the personnel. Charles Piez, president of the Link-Belt Company of Chicago, was made a vice-president of the corporation in charge of the actual construction, and he succeeded as general manager when Admiral Harris asked to be relieved. Mr. Piez was the incumbent of the office at the end of 1917. Under the reorganization James Heyworth, a Chicago contractor, was placed in charge of the wooden ship construction, and Charles Day of Philadelphia was sent to England to study the building of standardized ships in that country. A. J. Meson, a Chicago engineer, was detailed to field supervision of the various yards of the corporation.

Aside from the personal difficulties of the members of the Shipping Board and the Emergency Fleet Corporation and the lack of a decided programme and ability to carry it through, there were many other difficulties involved. At many points and especially on the Pacific Coast, there were numerous strikes, and in September a special wage adjustment board of which V. Everit Macy of New York was chairman, was appointed to deal with the matter, and established a basis of settlement and a method for avoiding future difficulties (see STRIKES). Furthermore, there was a great shortage of efficient and adequate labor, and at or near the new plants that were established, there was a lack of housing facilities so that it was difficult if not impossible to attract labor. The Emergency Fleet Corporation established an Industrial Service Department under the head of Meyer Bloomfield, an industrial engineer, whose function was to supervise a train of workmen for ship construction and also to develop plans for the housing of the workmen. At various centres, courses for instruction in shipbuilding were established and at least a beginning was made towards manning the plants with workmen, although up to the end of the year these were far insufficient in numbers. With the general demand for materials and the shortage of transportation, there was somewhat of an uncertainty as regards securing adequate supplies, although by the standard processes adopted much of the work was done at the steel mills, so that at many of the yards the work consisted merely of fabricating or riveting in proper position the sections and plates previously shaped and punched.

By the end of the year, the Emergency Fleet Corporation had developed an organization of 1000 employees and had established sixteen offices in various parts of the country. There were 1427 vessels being built in 132 shipyards scattered throughout the United States. During the fiscal year ending July 1, 1917, the total tonnage of merchant ships completed in the United States was nearly 800,000 tons. In 1916, there were 66 shipyards in the United States, of which 27 were for the construction of wooden ships, while by the end of the year, 1917, there were approximately 142 shipyards. The Emergency Fleet Corporation had let contracts during the year to 110 shipyards, of which but 36 existed on January 1, 1917. At the end of 1917, the Emergency Fleet Corporation controlled work at 132 yards, of which 58 were old and 74 new.

DEVELOPMENT OF SHIPBUILDING. An indication of the importance of the shipbuilding industry in the United States during 1917 was shown by the extent of the incorporation of shipping and shipbuilding firms. In 1917, firms of this class with capital aggregating $271,503,000 were incorporated. Prior to 1916, the total shipbuilding capacity of the world, including Germany and Austria, was 3,685,000 tons. The total production of ships in all of the world during 1917 was approximately 3,250,000 registered tons. The United States Shipping Board proposed by the end of 1919 to have constructed a grand total of 14,500,000 deadweight tons, or approximately 9,600,000 registered tons, these figures, however, including not only the new construction but that commandeered and the enemy ships that had been seized. In addition to the merchant shipbuilding of the United States, there was in progress of construction a numerous naval shipbuilding programme totalling 787 ships, of which 150 were to be submarine destroyers, giving to America the largest destroyer fleet in the world, and involving a total cost of $1,150,400,000.

The Urgency Deficiency Bill, which was approved on June 15, 1917, gave the president adequate power in placing orders for ships and ship materials and to take over for the use of the nation not only the output of the shipyards, but the shipyards themselves, operating them as national plants. The Emergency Fleet Corporation was active during the summer and autumn in awarding a large number of contracts for wooden, composite, and steel ships to firms and yards on the Atlantic, Gulf, and Pacific ports, as well as on the Great Lakes, so that every shipbuilding establishment in the United States had contracts for at least its capacity and even in some cases requiring various extensions. Late in November, the United States Government announced that since the Emergency Fleet Corporation had been formed, contracts had been let for 884 new vessels, aggregating 4,724,300 tons deadweight and that a further output of 426 vessels of 3,029,508 tons had been requisitioned on the ways. At the same time, there were contracts pending for 99 vessels of 610,000 tons.

The Shipping Board announced towards the end of September that the wooden ship programme had progressed 9 per cent, the requisitioned steel ship programme, 39 per cent; the composite ship programme, 20 per cent; and the contract steel programme 4 per cent. In this statement, it was further announced that of the 379 wooden hulls that had been contracted for, keels had been laid for 166, of which 130 were in yards that did not exist when the contracts were let. The wooden hulls were ordered from 72 yards, of which 51 were built from the ground up after the contracts had been let. Of the 58 composite ships contracted for, keels had been laid for 12, the contracts going to 4 shipyards, 3 of which did not exist when the contracts were made, but by the end of the year, they had been completed and were ready to undertake immediate construction.

Contracts for the steel ships were awarded to 32 yards, of which 20 were new, and 11 keels for steel ships had been laid in new yards. Four ships had been launched during the year, 2 of steel and 2 of wood, while of those requisitioned, 49 had been launched and completed.

The first of the vessels which had been contracted for by the Emergency Fleet Corporation was launched on November 24 at Seattle at the yards of the Skinner and Eddy Corporation, and during the year 1918 it was expected by the Shipping Board that 5,000,000 deadweight tons of merchant shipping or an amount almost ten times the maximum output of tonnage in American yards in any year prior to the war, would be completed. Such an amount would be as much as all the shipyards of the world combined had built in any year before the war.

Not only were new plants to be built, but in connection with them complete villages to house workers, as in many cases living facilities were either greatly inadequate and inconvenient or were absent altogether. Towards the end of the year, the housing problem became one of the most vital in the entire shipbuilding scheme, and at such places as Bristol, Pa., as well as other places, complete villages were being built.

Contracts for the construction of three government-owned shipyards for building fabricated steel merchant vessels were awarded by the Shipping Board's Emergency Fleet Corporation in September. They went to the Submarine Boat Corporation for a plant at Newark, N. J.; the American International Corporation for one at Hog Island, Pa., and the Merchants' Shipbuilding Co. for one at Chester, Pa. The yards were to cost $35,000,000 and the government was given an option to purchase the lands on which they are situated. The builders of the yards were given the contracts for building in them 200 ships. The Submarine Boat Corporation was to lay ways for building 28 ships simultaneously and would have facilities and equipment to turn out one 5000-ton ship every two days after the first vessel was completed.

The Submarine Boat Corporation also selected Newark Bay for its yards, which were in operation towards the end of the year, and it was proposed to have equipment whereby 28 ships could be assembled at a time, and each batch could be finished in about 4 months. This plant was completed within some 76 days' time and the first rivet was driven on December 20 in the first ship, 3 ships were laid down before the end of the year, and 5 ways were completed and 5 more in readiness. The Submarine Boat Corporation had contracts for 50 of the ships. Newark Bay was selected for shipyards by the United States Steel Corporation, whose subsidiary, the American Bridge Company, acquired during the year a large tract of land in the Hackensack Meadows, where standardized cargo boats would be constructed.

In connection with the development of the shipbuilding plant of the Union Iron Works at San Francisco, extra ground amounting to 100 acres was purchased and an immediate expenditure of $5,000,000 was contemplated which would eventually be expanded to $20,000,000. A canal half a mile long, 30 feet deep, and 300 feet wide was to be dug at the new site, marsh land was to be dredged and filled, and 4 shipbuilding berths from which 1000-ft. ships could be launched were to be constructed in addition to warehouses, machine shops, and other structures.

At Los Angeles also a shipbuilding plant was being started and the Los Angeles Shipbuilding and Dry Dock Company was formed with a capital of $1,500,000. This company had contracts from the United States Shipping Board and the Emergency Fleet Corporation for the construction of eight steel vessels. Its plant was being constructed during the year in the west basin of the inner harbor of Los Angeles, with complete equipment of shops, warehouses, wharves, and so on, with a proposed 50,000 ton dry dock, 750 feet long by 98 feet wide, later to be built.

Fabricated Ships. The great feature of the merchant shipbuilding of the year was the so-called fabricated ship. This was described by R. H. M. Robinson, president of the Chester Shipbuilding Company and the Merchant Shipbuilding Corporation as "a ship on which the work of punching and shaping the plates and shapes, to some extent, assembling and riveting, is done in a fabricating shop, ordinarily employed for bridge or tank work, as distinguished from the usual practice of doing it in a shipyard punch shop." The first of the ships of this type was built at Chester, Pa., and unfortunately fell a victim to a German submarine on its first voyage, but during the year a number of other ships of the same type were launched, and the method proved quite as successful as where the material was fabricated in the plate and angle shop of the shipyard. All of the work of bending except about 5 per cent can be done at the steel shops except the parts required for the bow and stern where careful work is required of especially trained ship builders.

In 1917 there were six large plants for the manufacture of these fabricated ships, two of which had been established by government subsidy, namely, the Hog Island plant of the American International Shipbuilding Corporation, near Philadelphia, and the Port Newark Terminal plant of the Submarine Boat Corporation, near Newark, N. J. There were other plants working on fabricated ships, namely, those of the Chester Shipbuilding Company, Chester, Pa., and the Merchant Shipbuilding Corporation, Bristol, Pa., two new plants of the United States Steel Corporation, the Federal Shipbuilding Company, Kearny, N. J., and the Chickasaw Shipbuilding Company at Chickasaw, Ala., near Mobile. The Chester plant was the only one that during the year was actually constructing ships.

Repairing Interned German Ships. When the United States at its entrance into the war took over 109 German ships that were interned in American ports by their owners, it found that many had been willfully damaged by their crews or German agents acting, as was alleged, under orders from a German central authority, whereby there should be general destruction of these ships effected on or about October 1, the date appointed for unrestricted submarine warfare. It was the intention of the Germans to so damage the vital machinery of these craft that none would be available for a year and a half or two years. This programme was in part defeated by vigorous measures taken by the United States government, although considerable damage was done before the plan of complete ruin was carried out. Instead of the irreparable damage contemplated by the enemy of which there was documentary proof, there was enough accomplished so that the repair and the installation of new machinery was a serious task which was, however, well handled by the Bureau of Steam Engineering of the Navy Department, so that the last of the enemy vessels could be ordered into service by the end of November. Much of this work was done by expert machinery welders and patchers. Three methods of patching were used: electric welding, oxy-acetylene welding and ordinary mechanical patching with welding in addition, as well as the use of thermite, the most involved use ever attempted in this connection. The number of ships repaired in New York Harbor totalled thirty-one, twenty-one of which had engines and auxiliaries seriously damaged, reaching from the *Vaterland* of 56,000 tons, the largest vessel in the world, to the *Nassovia* of 3900 tons. Excluding the *Vaterland* which was turbine driven there were 118 breaks in the cylinders of the twenty vessels reported and under other conditions, some seventy cylinders would have had to have been renewed as no less than 118 major breaks were detected. Under conditions existing in machine shops in and near the city of New York in 1917, this would have been impossible in any reasonable degree of time, so that when it was possible by patching to repair eighty-two of the major breaks by welding and thirty-six by mechanical patches, the importance of the work may be appreciated. The *Vaterland* was turbine driven with Parsons turbines, there being four turbines for going ahead and four astern turbines, the installation aggregating some 76,000 horsepower. All four astern turbines were badly damaged, and in addition the machinery of the vessel had deteriorated by poor maintenance while in actual service. There was no dock or shipyard of adequate capacity to handle such repairs, which were done while the vessel was in dock under charge of a chief engineer who was appointed immediately to organize the repair forces. In the case of the *Vaterland* as with the majority of the other German ships, there were no plans or drawings available, and this seriously interfered with the beginning of operations. It was no small triumph for American shipbuilders that all of these ships were put into service by the end of the year, and that the *Vaterland* was in condition to transport large numbers of American troops to France.

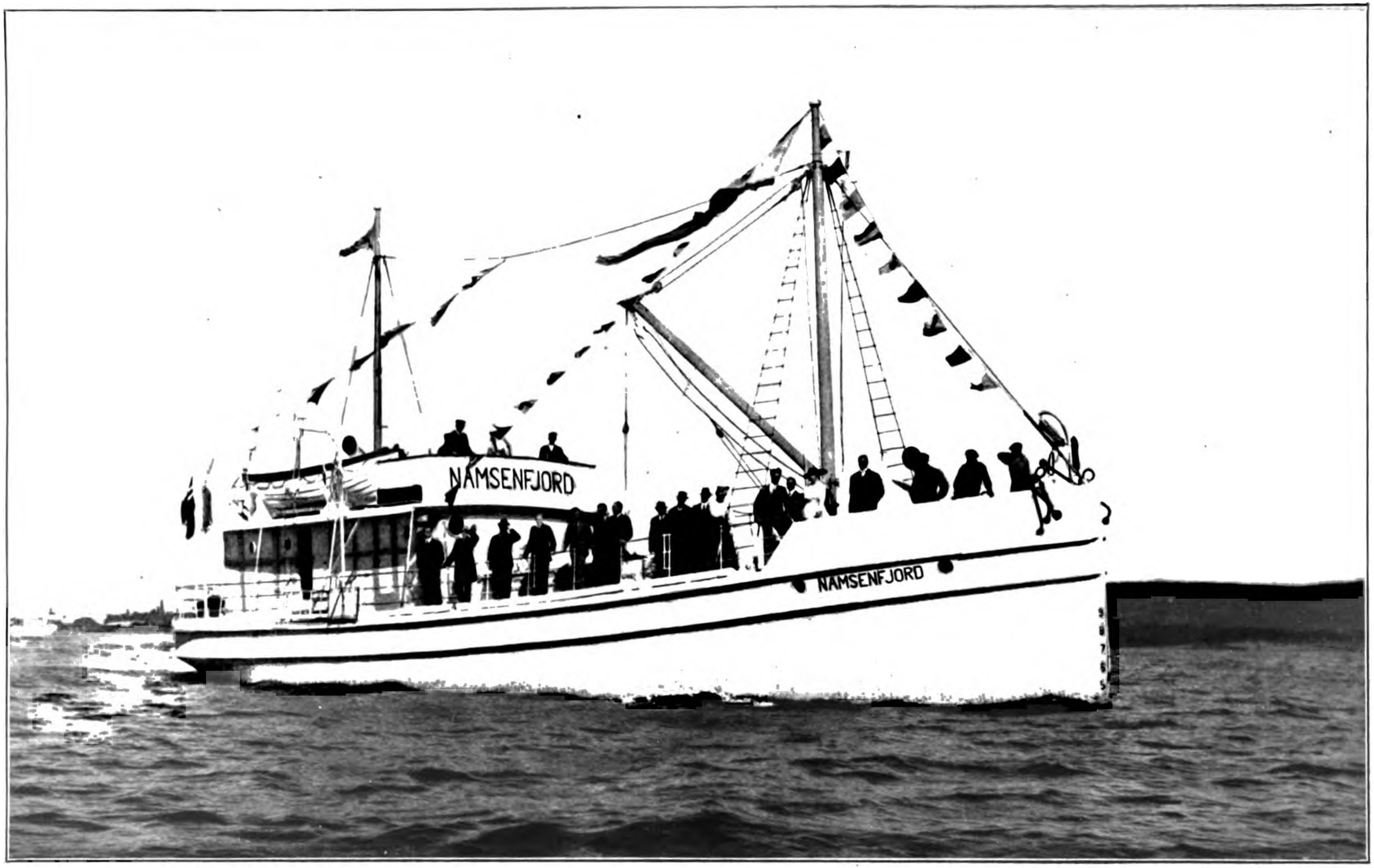
CONCRETE SHIPS. With the great demand for shipping in every part of the world, interest in ships made of reënforced concrete naturally increased, and what before was merely a suggestion was becoming a striking reality. With the comparatively moderate amounts of steel required ferro-concrete has many points to commend it for shipbuilding, not the least of which is expense. The Committee of Lloyd's Register of Shipping, an authoritative body of marine insurance experts, during the year approved plans for the construction of a number of ferro-concrete ships up to 500 tons deadweight capacity. And even larger craft were under construction. While it had been recognized that ferro-concrete would serve for lighters, barges, floating docks, buoys, and other floating objects, where the weight did not play a very important part, its use in the construction of seagoing vessels presented many points that were quite different. The experience with ferro-concrete structures on land was not entirely applicable, as for example there must be an increased tensile strength which must be carried as far as possible by the reënforced steel. Furthermore, minor cracks that frequently arise, and are considered of minor importance in short structures, cannot be neglected in seagoing ships. At all events, marine insurance underwriters, as well as shipping people generally throughout the world, were looking on concrete vessels as a future development.

In Norway, where important work had been done in this field, there was a distinct enthusiasm for the construction of ferro-concrete craft, due in large measure to the absence of the metals needed for shipbuilding, and the necessity of rehabilitating the merchant shipping fleet which had been severely depleted by war losses. Ship owners, alive to the encouraging results with smaller craft, were ready to take chances as they realized that in the abnormal war times freights were very high, and it would be long before they would fall to a pre-war basis. Consequently any vessel that could float and carry cargo would be relied upon under such conditions to earn large profits. In Norway steel plates and angles were difficult to obtain, but cement could scarcely find a market, and the materials for concrete aggregate were abundant.

In the yard of the Fougner Steel Concrete Shipbuilding Company at Moss, near Christiania, Norway, barges and ships up to 1600 tons capacity were built in 1916 and 1917, and at the end of the year there was under construction awaiting the approval of the Norwegian government, a 4000-ton freighter. This company was formed in May, 1916, by Nic. F. Fougner, a Norwegian engineer, who had specialized in reënforced-concrete construction in the United States, and the Far East, building in 1914 in Manila a 50-ton concrete lighter. The first craft to be turned out in the yards at Moss were lighters of about 100 tons capacity and from this were developed scows of towboats up to 200 tons capacity, which were employed for coasting tows along the Norwegian coast. Several floating docks had also been built.

In the summer of 1917 the first sea-going boat from this yard, the *Namsenfjord*, was launched, which was also the first concrete sea-going boat. It had a successful trial trip on August 1, and received the Class A-1 rating from Lloyd's, being placed in coastwise service in Norway. It was 84 ft. long, 20 ft. wide, and 11½ ft. deep from deck to keel with a draft of 9½ ft. It was 200 tons deadweight or 350 tons capacity, and was driven by a Bolinder crude oil engine of 80 horsepower, affording a speed of about 7½ miles per hour. The hull was monolithic with the deck and the frames round the hatches and those serving as foundation for the cabin aft. Outside the hull were two large wooden fenders. The vessel was admirably suited for the transport of timber, and was fitted with appliances for prompt loading and discharging a Bolinder motor. The vessel was to be put on a Norwegian coasting route.

At the end of the year a 1600-ton boat, 172 ft. long, 31 ft. wide, and 18 ft. high, drawing about 15½ ft. of water, was on the ways ready to be launched, while the 4000-ton capacity ore



THE NAMSENFJORD

A reinforced-concrete ship, 84 feet long and 20 feet wide, launched in the summer of 1917 by the Fougner Steel Concrete Shipbuilding Company at the Company's Yards at Moss, Norway.

carrier for the South Varanger Ire Ore Co., a Norwegian mining company, was under contract. It was 254 ft. long, 40 ft. wide, and had a draft of 19½ ft. with double sides and bulkheads and was to be equipped with two 300-horsepower Diesel engines.

Concrete ships of the Fougner system had a ratio of deadweight to displacement from 12 to 15 per cent greater than the similar ratio in steel ships. The Norwegian yard had a capacity of some 30,000 tons a year.

During the year a reënforced concrete ship of 450 tons was being constructed at San Francisco which was considered experimental, but it represented the most advanced developments in this type of construction. Late in the year, it was inspected by one of the concrete experts of the United States Bureau of Standards, and on the strength of his report, as well as after independent examination, the United States Shipping Board decided to undertake a similar experiment on its own account, probably at one of the southern yards. The board also announced that a Boston, Mass., corporation would build a concrete vessel of 3500 tons at its own expense to be turned over to the Shipping Board and, if accepted, it would receive a contract for twenty more vessels of the same size and type.

GREAT BRITAIN. In Great Britain 1917 was an important shipbuilding year as regards merchant tonnage, as many yards were released from naval and repair work to which they had been devoted previously from the outbreak of the war. A system of state control had been established for the various yards and the output in 1917 was far larger than 1916 or 1915. National yards were also established for the building of standard vessels and during the year a number of these were regularly launched. In the increase of the British merchant ships during the year, the standardized ship played an important part. So skillfully were the arrangements made for the fabrication of these vessels that on August 25, within six months from the laying of the keel, the trial trip of the first of these craft could be held. Before the end of September, it was fully loaded and proceeded on its first voyage. This test demonstrated the complete success of the type. The British Government had evolved two types of standard ships each of 8000 tons deadweight carrying capacity, one being a single deck ship and the other a two-deck ship. The single deck vessels were specially adapted for carrying grain, while the twin deck ships were for general cargo. Later in the year it was proposed to construct two smaller types of 5000 tons and 3000 tons deadweight carrying capacity respectively, and other types of standard vessels were being evolved. Not only the hulls but the machinery and engines including the auxiliaries were completely standardized.

In September, 1917, the British Government took over the shipyard which was being laid out at Chepstow, by the Standard Shipbuilding and Engineering Company. This action was somewhat of a surprise to British shipbuilders, but the occupation of the Chepstow yard was believed to be only for the period of the war, and to expedite the policy of the shipping controller. This yard was planned for standard shipbuilding along comprehensive and specially organized lines, and it is believed that its commandeering by the Government will enable the plans to be carried out more speedily and more effectively.

GERMANY. It should not be inferred that the German shipyards were idle during the period of the war. At the Vulkan yards near Bremen, there was launched during the year by the Hamburg-American Line the 16,000-ton steamship *Rheinland*. Indeed, it was reported by the *Berliner Tageblatt* that in 1916 and 1917 the larger shipyards had been increasing their plants and equipment as well as their capital, and that in the two years mentioned eleven of the principal yards which at the beginning of 1916 had share capital of 41,930,000 marks since that time had increased it to 74,200,000 marks. In this number are not included the Stettin and the Bremen Vulkan yards at which a large tonnage had been built for the North German Lloyd and Hamburg-American lines, but there were a number of new shipbuilding works established and the erection of others was planned including the Hamburger Werft Aktiengesellschaft, founded by the Hamburg-American Line, in conjunction with the Allgemeine Elektrizitats Gesellschaft and the Securitas Shipyard at Harburg, founded by the Securitas Explosive Works.

It was reported that there had been a certain amount of mercantile tonnage produced from time to time in Germany, notwithstanding the war, although most of the yards were working on naval work.

CANADA. At the end of the year the Canadian government was discussing the formulation of a progressive shipbuilding programme involving an annual expenditure of between fifty and sixty millions of dollars. The ships were to be built and owned by the government, and would be operated partly at least by the government and perhaps wholly, and after the war they would be used as a government-owned ocean line to coöperate with the public-owned railways. The existing yards, namely, the Vickers, Montreal; George Davies, Levis; Polson Iron Company, Toronto; Collingwood Shipbuilding Company, Port Arthur Dry Dock and Shipbuilding Company, and the yards at the Pacific Coast were to be utilized to the utmost capacity. After the ships under contract for the British Government had been completed, the Dominion government was to undertake all construction, and there was to be an equitable distribution of labor between the various plants. Steel rolling mills to make plates were to be located and built in Canada so as to make the Dominion independent of steel from the United States. The total capacity of the Canadian steel mills at the end of the year was 300,000 tons per year, while the productive capacity of the shipyards which at the end of the year were working for the British Government, for local interests, and for foreign account can be roughly estimated at from 275,000 to 300,000 tons annually.

SWEDEN. On September 14 the steamer *Viken*, 3100 tons deadweight, built for the Swedish Transatlantic Company, was launched from the Lindholmen yard, and on September 29 it was delivered to the owners. The trial trip was to be undertaken as soon as the steamer had taken cargo on board. Important harbor works were about to be undertaken in Stockholm, after deliberations extending over several years. They comprise the construction of the new Hammarby channel, which is to connect the Mälaren with the Saltsjön, i. e., the waters east and west of

Stockholm, and the deep water harbor at Lindarängen which is to form part of the new free harbor project. The municipality of Stockholm was contemplating a 20,000,000 kroner loan to cover the cost of the works in question (18 kr. = 1 £.).

JAPAN. Prior to the outbreak of the great war Japan was in possession of nine shipyards capable of building vessels over 1000 tons. The war has caused seven new yards of a like capacity to be added to the list, so that now Japan is capable of constructing fifty-four vessels of over 1000 tons at a time. If the potential capability of the country were to be put into active operation to the fullest extent, Japan would be able to turn out newly constructed vessels aggregating from four to five hundred thousand tons in a year. Last year, however, Japan built only about 250,000 tons, owing to the stoppage of the importation of the materials needed in building and equipping the vessels.

SHIPPING. The operation of the merchant fleets of the world during 1917 was so intimately connected with the great war that it is hardly possible to discuss the subject apart from the naval and political issues involved in the war itself. Everywhere there was a vast need of over-seas transportation and the ships that were able to carry on commerce reaped extraordinary profits though naturally the dangers were correspondingly great. At the opening of the year, the factors that were most seriously to be reckoned with were the elimination of the Central Powers from the commerce of the world, a condition of course that had been brought about in the early years of the war. The active prosecution of war by the submarines on the merchant shipping of the Allies and also a more or less unrestricted attack upon neutral shipping were further important considerations. As a result there was an important loss of ships by the British and a serious dislocation of the commerce of the Allies, when it was attempted on the basis of the international law, once recognized. The demands of the Allies for supplies and munitions from over-seas naturally led to an active commerce, and tonnage was at a premium.

The year 1917 produced many important changes. The German government presented a note to the United States to the effect that from February 1, all sea traffic would be stopped by every available weapon without further notice, in every specified zone. It did not matter whether the commerce was enemy or neutral although the United States was to be permitted one steamship a week in each direction to Great Britain making use of Falmouth as the port of arrival and departure. This led President Wilson to sever political relations with Germany, and the political events following his announcement of this fact to the Congress, February 3, are discussed under WAR OF THE NATIONS, and UNITED STATES AND THE WAR.

Some of the significant items in connection with shipping it is purposed to summarize here. According to *Lloyd's Register* for 1916 and 1917, the world's tonnage consisted of 48,683,136 tons, of which 4,151,552 tons were assigned to Germany and 892,618 tons to Austria-Hungary. Inasmuch as German and Austrian tonnage was either interned in home or neutral ports, or had been destroyed by Allied cruisers, it did not figure particularly. On the other hand, the merchant marine of the Allies and the neutrals was an important part in the prosecution of the war from the standpoint of supplies for the belligerents as well as for actual necessities such as foodstuffs for both belligerents and neutrals. Consequently, the destruction of such shipping, while it might endanger neutrals, was of distinct military advantage to the Central Powers, and in an important way had its effect on the progress of the war. Accordingly, February, 1917, marked a distinct epoch in this phase of the war with which merchant shipping was concerned. For the losses by German submarines, see SUBMARINE OPERATIONS.

It will be apparent that the urgent demand in all quarters then was for ships, and in 1917 as in previous years the construction of ships became most active (see SHIPBUILDING). On the other hand, the operation of ships was quite as important, and on all sides, the various governments took over ships and operated them in the interest of the respective countries. Accordingly, in the United States we find that the United States Shipping Board, whose functions had been defined by the acts passed in 1916 establishing it, was vested with increased powers and permitted not only to commandeer ships building, but also ships in active use owned by private corporations. Accordingly, these ships were taken over into the government service and arrangements were made for their operation according to fixed rates and under conditions established by the Shipping Board.

In Great Britain a somewhat similar condition of affairs took place, and a controller of shipping was appointed to whom was given direction of shipping, both new and in private ownership, and various rates were fixed, and provision made for the distribution of tonnage. With the entrance of the United States into the war, American shipping had still further to deal with the submarine menace, and the government provided for many merchant vessels, crews of naval gunners, and mounted guns on the vessels. The question of cargoes from the United States reaching Germany also became an important consideration, and after the president was authorized to issue notices of embargoes and to carry on this work, through the War Trade Board, complications with neutral shipping resulted. For a number of months, a vast amount of Dutch tonnage was tied up in the Harbor of New York awaiting permission to sail, and in other cases neutrals failed to receive permits where they could not fully satisfy the American authorities as to the ultimate destination of their cargoes.

During the year the British Government appointed as shipping controller, to take over full control of all matters affecting tonnage, Sir Joseph Maclay, of Glasgow, who requisitioned all British shipping, and promptly transferred the unnecessary tonnage in the East and in the South Africa and Australia trades to the Atlantic trades. This shipping was managed by established shipping companies who were restrained from pushing their own interests into a trade in which they had not previously participated, and the tonnage was paid for at government rates. The British ship owners responded loyally to these demands, and greater efficiency was developed in connection with the merchant marine.

Notwithstanding the losses due to submarine and mines, the year 1917 was a fairly profitable one for British shipping. According to the annual statistics compiled by the magazine *Fair Play* (London), seventy British cargo steamship companies, having a paid-up capital and aggregating £13,566,695 paid dividends in 1917, totaling £2,610,662 or 19.24 per cent upon the capital. These companies had 427 vessels of 1,749,431 gross tons with a book value of £25,773,962. The results of operation in 1917 represented a steady and progressive increase in earnings which in 1904 amounted to but 3.64 per cent upon the capital. For eight years ending with 1911, the average earnings were but 3.3 per cent, but improvements began about that time, and have been constant since. Twenty-three representative British companies operating liners had earnings in 1917 amounting to 14.09 per cent on a paid-up capital of £37,789,577 with considerable reserves which were earning interest. These lines owned 925 vessels of 4,884,243 gross tons with a book value of £81,445,855. In the twelve years ending 1917, the average dividends distributed were 8.12 per cent, a higher gain. This was an increase from 4.46 per cent in 1906. Accordingly 1917 was for both passenger and cargo ships the best year in an extended period.

The condition of over-seas transportation during the war was well illustrated in the announcement made in Great Britain that nine transports had been sunk with a total of about 2000 casualties since the beginning of the war, while more than 11,000,000 soldiers had been transported for long or short voyages. At times there were as many as 200,000 British soldiers afloat.

UNITED STATES. In addition to the shipbuilding programme, the merchant marine of the United States was increased by the seizure of German and Austrian vessels interned in American ports at the beginning of the war. In the United States ports, there were seventy-one German vessels of 535,000 gross tons and in the Philippine ports twenty-three of 86,000 gross tons and in Pacific island ports, one of 6600 tons; the total tonnage of the ninety-five vessels thus seized amounted to 628,837 tons. There were fourteen Austrian vessels interned in American ports prior to the war, but eight of these were sold to the Kerr Steamship Corporation before the United States declared war on Austria. The German merchant fleet thus acquired was indeed large and important. It included the *Vaterland*, which was renamed the *Leviathan*, and other large vessels, many of which were put into service as transports for troops and supplies, while others were used as liners. Some were being operated by the United States army and navy, some by the Shipping Board, and some by steamship firms.

The German submarines, however, were able to attack successfully three of the vessels that were formerly owned in Germany. These were the *Actaeon*, formerly the *Adamsturm*, the *Owasco*, formerly the *Allemannia*, and the *Armenia;* the last named was hit by a torpedo, but was successfully beached and saved. Other German ships were attacked but escaped.

On October 15, 1917, an order of the Shipping Board requisitioned all American merchant vessels of over 2500 gross tons, although the various details of the plans under which the government was operating these vessels were not made public to the end of the year. It was assumed that these vessels were being operated by their owners for the account of the national treasury according to the schedule of rates of hire previously published by the Shipping Board. The number and tonnage of American vessels thus requisitioned and afloat amounted to 393 of 2,771,933 deadweight tons, as follows:

	Vessels	*Deadweight Tons*
Colliers	9	64,500
Passenger and cargo	9	43,558
Tankers	58	565,155
Cargo	317	2,098,720
Total	393	2,771,933

That there would be a substantial decrease in this number due to the operation of the German submarines was, of course, realized, and a discussion of this phase of the matter will be found under SUBMARINE OPERATIONS. However, it may be stated that in the course of the year, the United States lost sixty-eight ships, through mines or submarines, ten of which were destroyed before the actual entrance into the war, and fifty-eight during the remainder of the year. The loss of life involved exceeded 300 persons. Of the ships destroyed more than one-half were sailing ships which, as the war progressed, were forbidden by the United States government to enter the submarine zone.

Considering the losses occasioned by the German submarines and mines in comparison with the German and Austrian tonnage taken over by the United States it will appear that America had to its credit a net gain of over 500,000 tons. Furthermore, when the percentage of ships lost compared with the total amount of tonnage that transverse the submarine zone was considered, the loss appears very small. From February 1, 1917, to December 1 of the same year, there were cleared from American ports in the foreign trade vessels aggregating 17,738,900 tons, or approximately 24,834,400 gross tons. The number of ships comprising this tonnage was not stated by the United States government at the end of the year, but when it is considered that the aggregate loss was but 171,061 gross tons, the effect of the submarines on American commerce can be appreciated.

The 393 American vessels over 2500 tons deadweight capacity and already afloat which were requisitioned on October 15, 1917, by the shipping board were immediately assigned to the task of carrying supplies for the Allies and the American forces abroad. Among these requisitioned vessels were twenty-one ships in the Great Lakes trade and twenty-four vessels which were being built on the Great Lakes for foreign account which were ready for launching.

These latter craft were brought to Atlantic coast ports and immediately put into service. A number of them had to be cut in two in order to make the passage through the Welland Canal, which was being extended and reconstructed. In 1917 it had 25 locks of a size that put a limit on vessels of 250 ft. length and 44 ft. beam or about 3500 tons. Some thirty ships not exceeding these dimensions had passed out from the Great Lakes to the Atlantic Ocean and sixteen more had been cut in sections and transported through the canal to be reassembled at Montreal. The larger passenger ships on the Great Lakes had too wide a beam for this purpose, but other ships that were available were being used in large numbers.

Disregarding any losses by submarines or from other causes, the American merchant marine by the end of 1917 would be very much as indicated in the following table:

	Vessels	*Deadweight Tons*
Contracted for..........	884	4,724,300
Contracts pending.......	99	610,009
Requisitioned on ways..	426	3,029,508
German and Austrian...	100	700,000
Requisitioned afloat.....	393	2,771,933
Total..............	1,902	11,835,741

With the congestion on the railways of the United States and the extensive use of the merchant vessels for over-seas commerce, the coastwise trade also was affected by an important act approved by the president on October 6, 1917. This act authorized the Shipping Board to suspend the Coastwise Trading Law in favor of foreign vessels so as to secure a more economical use of tonnage. This measure involved a special permit issued to foreign vessels to engage in coastwise trade which specified the limits of the proposed voyage. This act was to expire automatically 120 days after the conclusion of the war.

Facilities for Water Transportation. During the year there was in progress by the Bureau of the Census an investigation of water transportation facilities in the United States for the year ending December 31, 1916. This investigation covered vessels of five ton net register or over, of all classes operating during the year on the coast or inland waters of the United States, including Alaska, or between ports of the United States and foreign countries. Such vessels numbered 37,894 and had a total gross tonnage of 12,250,000. (Gross tonnage is calculated by dividing entire internal capacity, in cubic feet, by 100.) The geographical distribution of this gross tonnage was as follows: Atlantic Coast and Gulf of Mexico, 6,509,000; Mississippi River and its tributaries, 1,621,000; Pacific Coast, including Alaska, 1,185,000; Great Lakes and St. Lawrence River, 2,738,000; canals and other inland waters, 196,000. The distribution according to method of propulsion was: Steam and other power, 6,098,000; sail, 1,089,000; unrigged, 5,063,000.

The above figures were significant in that they implied an increase in number of vessels over 1906 equal to only 1½ per cent, while there was a decrease amounting to 5 per cent in the gross tonnage. This decrease was explained by the falling off in numbers and tonnage of sailing vessels and unrigged craft, such as barges and canal boats. The decrease in sailing vessels in numbers was from 7131 to 2979 or 58 per cent and in gross tonnage from 1,704,000 to 1,089,000 or 36 per cent. While unrigged craft increased in number from 20,263 to 20,334, there was a decrease in tonnage from 7,130,000 to 5,063,000 or 29 per cent. Steam propelled and other power-driven craft increased in number from 9927 to 14,581 or 47 per cent and in tonnage from 4,060,000 to 6,098,000 or 50 per cent. The average tonnage per vessel for the country as a whole decreased from 345 in 1906 to 323 in 1916.

The proportional increase during the period was most pronounced on the Pacific Coast including Alaska, where it amounted to 61 per cent, but the greatest rate of increase in tonnage was for the Atlantic Coast and the Gulf of Mexico, amounting to 34 per cent, as against 21 per cent for the Pacific Ocean, including Alaska. For the Great Lakes, the increase in tonnage was 14 per cent. On the other hand, there was a great decrease in tonnage from 4,412,000 to 1,621,000 or 63 per cent on the Mississippi River and its tributaries, and a decrease of 24 per cent for canal and other inland waters.

A significant feature for the year 1916 over the previous census period was the great increase in the value of vessels, gross income, wages paid, and freight carried, though there was a decrease in the number of employees, and also in the number of passengers. While there was a decrease in the gross tonnage taking place as mentioned in sailing and unrigged craft, there was a vast increase in the amount of freight carried. The decrease in the number of passengers carried was due to the reduction in ferry traffic due to the construction of tunnels about Greater New York. The report of the Census Bureau as summarized in its preliminary form is given on the following page.

SHIPPING LOSSES (from Submarines). See Submarine Operations.

SHOOTING. The war had a tendency to increase the interest in shooting and the sport was taken up by many who never before had visited the traps. C. H. Newcomb, of the Philadelphia Gun Club, won the amateur championship at the tournament held under the auspices of the New York Athletic Club, breaking 191 out of the possible 200. Ralph L. Spotts, of the New York A. C., the former title holder, finished twelfth in the contest.

The Grand American tournament held at Chicago attracted the largest entry in its history. Mark Arie, of Thomasboro, Ill., captured the national amateur championship at single targets while C. H. Larson, of Waupaca, Wis., carried off the honors in the handicap event. Bart Lewis, of Auburn, Ill., retained his title as champion professional shooter of the United States. Princeton University won the intercollegiate championship, the best individual work being done by C. V. Caesar, of that institution.

SIAM. An independent kingdom of southeastern Asia. It extends approximately from the 6th to the 20th degree of north latitude and from the 97th to the 106th degree of east longitude; its length from north to south is approximately 1200 miles, and its greatest breadth, 480 miles. The coast line is 1300 miles in length. Total area, about 198,900 square miles. Bangkok is the capital. On July 27, 1917, Siam declared war on Germany and Austria, interning subjects of those countries and seizing enemy ships. See below.

Population, etc. The country is divided into seventeen monthons (circles), subdivided into 79 muangs (provinces), which are again subdivided into 409 amphurs (districts); these are in turn made up of 3993 tambons (villages), divided into mu bans (hamlets). The population of the kingdom is said to be 8,266,408. Chinese coolie immigration, 1913-14, 70,162; emigration, 62,088. There are upward of two hundred Europeans and Americans resident in Siam, mostly in Bangkok. That city has 628,675 inhabitants, of whom 197,918 are Chinese. The religion of the court of Buddhism, and large educational powers are in the hands of Buddhist monks.

TRANSPORTATION BY WATER—YEAR ENDING DECEMBER 31, 1916. PRELIMINARY REPORT ISSUED BY THE CENSUS BUREAU.

Statistics for the year ending December 31, 1916, for all American documented and undocumented vessels of five tons net register or over that were operated on the coasts or inland waters of the United States, including Alaska, or between ports of the United States and other countries. The statistics do not cover vessels owned by the Federal government, stationary wharf boats, or house boats without propelling power. Comparative summary, active craft, by geographic divisions; 1916 and 1906:

	Census Year	*United States* *	*Atlantic Coast and Gulf of Mexico*	*Pacific Coast (including Alaska)*	*Great Lakes and St. Lawrence River*	*Miss. River and its Tributaries*	*Canals and Other Inland Waters*
Number of vessels	1916	37,894	21,658	4,092	2,856	7,239	2,049
	1906	37,321	20,032	2,537	2,990	9,622	2,140
Per cent of increase		1.5	8.1	61.3	† 4.5	† 24.8	† 4.3
Gross tonnage ‡	1916	12,249,990	6,508,617	1,185,961	2,737,491	1,621,495	196,426
	1906	12,893,429	4,851,421	977,687	2,392,863	4,411,967	259,491
Per cent of increase		† 5.0	34.2	21.3	14.4	† 63.2	† 24.3
Value of vessels	1916	$959,925,364	$629,074,203	$127,810,646	$174,765,526	$23,030,503	$5,744,486
	1906	$507,973,121	$278,105,915	$76,622,633	$130,805,640	$22,852,142	$4,586,791
Per cent of increase		89.0	130.3	66.2	33.6	0.8	25.2
Gross income	1916	$563,736,367	$376,806,060	$80,215,193	$85,095,887	$17,439,746	$4,179,481
	1906	$294,854,532	$159,759,924	$48,520,139	$65,274,702	$17,342,038	$3,957,729
Per cent of increase		91.2	135.9	65.3	30.4	0.6	5.6
Number of employees	1916	153,301	84,978	23,576	26,873	14,706	3,168
	1906	140,929	77,124	20,142	24,916	15,016	3,731
Per cent of increase		8.8	10.2	17.0	7.9	† 2.1	† 15.1
Wages	1916	$103,235,534	$58,902,964	$18,055,141	$18,688,219	$6,380,825	$1,263,885
	1906	$71,636,521	$38,352,259	$12,950,399	$13,280,716	$5,692,117	$1,361,030
Per cent of increase		44.1	53.6	39.4	40.3	12.1	† 7.1
Number of passengers carried	1916	331,590,565	237,845,627	55,408,848	19,231,681	17,599,378	2,005,036
	1906	366,825,663	292,555,416	44,189,971	14,080,146	14,122,241	1,877,889
Per cent of increase		† 9.6	† 18.9	25.4	36.6	24.6	6.8
Freight carried, including harbor work (net tons of 2,000 pounds) §	1916	376,176,496	181,526,448	25,125,484	126,295,658	40,169,427	3,059,479
	1906	265,545,804	140,512,048	17,622,816	a 75,609,649	27,856,641	3,944,655
Per cent of increase		41.7	29.2	42.6	67.0	44.2	† 22.4

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* Fishing craft are not included in the comparative summary, because not taken in 1906. In 1916 there were 5,216 such vessels in operation having a total gross tonnage of 145,246.

† Decrease.

‡ Gross tonnage is calculated by dividing the entire internal cubical capacity of a vessel, in cubic feet, by 100.

§ Includes lighterage, or harbor work, amounting to 123,350,315 tons in 1916, and 88,026,046 in 1906, the figures for 1906 being exclusive of harbor work on the Great Lakes.

a Bureau of Statistics, Department of Commerce and Labor, monthly summary, internal commerce of the United States, December, 1906; includes 2,003,453 net tons of bunker coal.

Agriculture is carried on under primitive conditions. Irrigation is practiced, and rice is the leading crop. The product next in importance after rice is teak. The forests in which this species occurs are situated for the most part in the monthons of Bayap, Nakonsawan, and Pitsanulok, and are leased to private companies for a term of years, usually fifteen. The only minerals worked on a commercial scale are tin and wolfram. Seven-eighths of the tin comes from the Puket monthon.

COMMERCE, ETC. The total imports for 1915-16 were valued at £5,803,850, and the exports at £8,151,940. The United Kingdom contributed imports valued at £994,380 and received exports valued at £819,622; China, £688,069 and £49,318; British India, £701,638 and £230,070; Singapore, £1,265,263 and £4,086,705; Hongkong, £1,139,800 and £2,395,769.

There were entered at the ports in the 1914-15 trade, 898 steamers of 805,638 tons; cleared, 896 of 802,255. Entered 1915-16, 862, of 729,210 tons.

The Siamese government *Gazette* announced the registration on October 8, 1917, of a new Siamese shipping company under the name "Borisat Panich Navi Siam (Ltd.)," with a nominal capital of 1,000,000 ticals in shares of 100 ticals. Among the promoters of the company were Siamese princes, noblemen, and officials. This company was to take over the two German steamships and one steam lighter that had been recently seized and condemned as prizes by the Siamese prize court.

"Progress in the construction of the Siamese railroads foreshadows the establishment of a rapid land route between the Gulf of Bengal and the China Sea," says the *Geographical Review*, December, 1916. "As soon as the Siamese railroads become linked with the systems in China and Indo-China, an overland short-cut will become available and the long voyage around Singapore may be avoided. The first Siamese railroad, opened in 1897, ran between Bangkok and Ayuthia, the old capital. This, the northern part of the system, was extended up the valley of the Menam River to Lampang on the upper Meping, a western tributary of the Menam. The short distance to Chiengmai, the northern capital, was expected to be completed shortly. The region to be tapped here is rich in natural resources, which, with adequate transportation, would find a ready market in Bangkok. The southern part of the system embraces the coastal districts of the Gulf of Siam. Its most important section would eventually run along the whole length of the Malay peninsula. Of a total of 470 miles, 120 were in operation on April 1, 1915. In the budget estimates of Siam for the fiscal year ending March 31, 1918, appropriations amounting to $1,369,000 were made for the extension of the northern railway line, and $212,010 for the construction of branch lines of the southern railway. There were also appropriations of $1,717,355 for the irrigation project under construction, $48,877 for Bangkok waterworks, and $321,252 for the completion of the new royal yacht.

Estimated revenue, 1916-17, £5,549,348; expenditure, £5,549,348; extraordinary expenditure against capital account, including expenditure from loans, £1,418,062. The reigning king is (Somdetch Phra Paramindr), Maha Vajiravudh, born January 1, 1881.

HISTORY. On July 27, as noted above, the kingdom of Siam declared war against the Central Powers. For a long time past the Entente Allies had made demands upon her. After the war broke out a large number of Germans who were in the Indo-Chinese possessions of France and in the Indian territories of Great Britain sought refuge in Siam. Many of them recruited bands from among the natives and organized movements against the Allies while the government of Siam looked on apparently with indifference. At last the French government called upon the authorities at Bangkok to choose between the Entente Allies and their enemies, and Great Britain which before the war had had a privileged position and preponderant influence in Siam, presented an ultimatum along with France to the Siamese government. The break with Germany followed. It was regarded as likely to bring important consequences and to restore order to both the French and the British possessions in the East. It obliged the Germans now to seek refuge in the Dutch East Indies. Thus the last country of Asia was closed to the Central Powers.

SIBERIA. That part of Russia which occupies northern Asia. The area is stated at 4,831,882 square miles. Some idea of the vast extent of this region may be had by comparing it with the United States, whose continental area (excluding Alaska) is 3,026,789 square miles. Population of Siberia, 10,377,900, according to the estimate of January 1, 1915. Siberia consists of the governments of Tobolsk, Tomsk, Irkutsk, and Yeniseisk, and the provinces of Transbaikalia, Yakutsk, Primorskaya, Amur, Kamchatka, and Sakhalin. There is much fertile land in Siberia, and since the opening of the Trans-Siberian Railway the population has rapidly increased. Estimated population of the larger cities prior to the great war were as follows: Irkutsk, 129,700; Tomsk, 116,700; Vladivostok, 91,500; Krasnoyarsk, 87,500; Chita, 79,200; Blagovyeschensk, 62,500; Novo-Nikolaevsk, 63,000; Barnaul, 61,300; Khabarovsk, 51,300; Nikolsk-Usuriysk, 47,400; Tyumen, 39,200; Tobolsk, 25,200; Yakutsk, 10,800. The western capital of Siberia is Tomsk; the eastern capital, Irkutsk. See ANTHROPOLOGY; and RUSSIA.

SIBERT, WILLIAM L. See WAR OF THE NATIONS, *Military Operations* (9).

SIERRA LEONE. A British colony and protectorate on the west coast of Africa, bounded by French Guinea and Liberia. The area of the colony is about 4000 square miles; population, 75,572, of whom 702 white. Freetown, the capital, with the best harbor in west Africa, had 34,090 inhabitants. The colony and protectorate together have an area of 32,110 square miles; population, 1,327,560.

Sierra Leone's leading export is palm kernels, valued in 1915 at £504,033; the export of kola nuts amounted to £235,406; other exports are palm oil, ginger, and piassaba. Statistics of trade and finance for successive years:

	1912	*1913*	*1914*	*1915*
	£	£	£	£
Imports ...	1,424.864	1,750,808	1.405,049	1.255.755
Exports	1,540.754	1,731.252	1,250.478	1.254.621
Revenue ...	559.855	618,583	675.689	504.424
Expend. ...	524.417	622,439	680.146	546.771
Shipping * .	2,676.471	2.931,085	2,780,118	1.635.119

* Tonnage entered and cleared.

SILESIA. 1. A crownland of Austria. Area, 1987 square miles. Population at census of December 31, 1910, 756,949 (2.65 per cent of the Austrian total), as compared with 680,422 in 1900. Austrian subjects in 1910, 741,456; of these, German was the vernacular of 43.90 per cent; Polish, 31.72 per cent; Bohemian, Moravian, Slovak, 24.33 per cent. Catholics formed 84.52 per cent of the population; Evangelicals, 13.58; Jews, 1.77. The capital is Troppau (population in 1910, 30,762). Silesia has a diet of 31 members and is represented by 15 members in the Austrian Reichsrat.

2. The largest and, after the Rhine province, the most populous province of Prussia. It occupies the southeastern part of the kingdom. Area, 15,573 square miles. Population at the census of December 1, 1910, 5,225,962; 42.08 per cent were Evangelical and 56.69 per cent Roman Catholic. Capital, Breslau.

SILK. The advance in prices which was a marked feature of all row materials in 1917 affected the silk industry, and the advance in price in Japan raw silk, which started in the early days of January, continued steadily, with only a few minor reactions, until the middle of August, at which time were established the record high figures for over forty years, a period going back to the time when the American silk industry was still in its infancy. The highest price was reached on August 13, which was $7.10 per pound, an advance of no less than 37 per cent over quotation ruling on January 2, 1917, which was $5.20 per pound. This may be compared with the low record price of $2.75 made in November, 1914. In the next two months there was a severe decline, which resulted in heavy losses to those who had believed that the price would reach $10 per pound. This decline was arrested in the middle of October by action taken by the Japanese reelers which resulted in a fixation of prices.

There was something of a falling off in the consumption of silk during the fall season, but this was a falling off only as compared with the usual activities of the spring season, for there was a diminishing demand as usual in the last two months of the year. In spite of this, there were some mills which had actually booked more business in the last two months of 1917 than were recorded in the year 1916.

It is evident that in the future there must be a greater activity in the silk industries, for silk fabrics must of necessity be given more and more preference by costumers as the result of the exceptionally large requirements of woolen goods on the part of the government. In December, resolutions were passed by garment makers at a special recommendation of the Commercial Economic Board of the Council of National Defense, that woolens be conserved and more silk and cotton fabrics be used in the manufacture of garments.

The shipments of Japan raw silk during the year were about 143,000 bales, of which 125,000 went to United States and 18,000 to Europe. The report in the last part of the year from the Milan market indicated a very full demand for European requirements. Lyons is said to have been quite bare of silk.

The following table shows the raw silk production, including tussah silk, in 1915-16 and 1916-17:

Crops in Pounds	*1916-17*	*1915-16*
Europe	8,977,000	7,087,000
Viz.:		
Italy	7,963,000	6,349,000
France	485,000	286,000
Austria	331,000	331,000
Spain	198,000	121,000
Levant	2,293,000	2,293,000
Asia: Total quantity exported *	47,603,000	41,154,000
Viz.:		
* China, Shanghai	† 9,426,000	9,836,000
* China, Canton	5,543,000	4,083,000
Japan, Yokohama	32,374,000	27,013,000
India (estimated)	260,000	220,000
Total, pounds	58,873,000	50,534,000
Tussah, raw	1,805,000	2,556,000
Grand total, pounds	60,678,000	53,090,000

* The production of raw silk in China is an absolutely unknown quantity.

† Excludes Tussah silk.

The figures for Asiatic silks are the actual shipments from the various countries of production, viz.: China, Canton, Japan, etc.

The domestic consumption of Japan is estimated to be approximately 30 per cent of the production. The remaining 70 per cent, which is exported, being 32,373,675 pounds during the season 1916-17. The total production equals the export divided by 70 and multiplied by 100, which therefore amounts to 46,248,100 pounds.

The domestic consumption of China (including Tussah silk) is estimated to be 55 per cent of the production in average years. The remaining 45 per cent, which is exported, being 16,774,357 pounds from Shanghai and Canton during the season of 1916-17. The total production equals the export divided by 45 and multiplied by 100, which therefore amounts to 37,276,300 pounds.

SILVER. The silver production of the United States in 1916 was 74,414,802 fine ounces. This was a decline of over 2,000,000 ounces from the production of 1915. There was a decline also in the production in Canada and Mexico. At the same time the price of silver increased, and in May, 1916, reached a record price of 77¼ cents.

The production of silver in 1917 was 74,244,500 ounces. The largest quantity, 14,315,300, was obtained from the mines of Utah. Montana ranked second with 13,711,100, and Idaho third with 11,683,100. The Bureau of the Mint and the Geological Survey have issued the following joint statement as to the preliminary estimate of the production of silver in the United States during the calendar year 1917:

State or Territory	*Silver Fine Ounces*
Alaska	1,351,100
Arizona	8,183,200
California	1,989,800
Colorado	8,163,600
Idaho	11,683,100
Illinois	8,300
Maryland	1,100
Michigan	686,700
Missouri	21,100
Montana	13,711,100
Nevada	11,441,000
New Mexico	1,318,700
North Carolina	2,800
Oregon	215,700
South Dakota	191,100
Tennessee	99,300
Texas	583,200
Utah	14,315,300
Vermont	400
Virginia	9,400
Washington	257,000

State or Territory	*Silver Fine Ounces*
Wyoming	4,900
Philippine Islands	16,600
Total	74,244,500

Compared with the 1916 production—74,414,802 fine ounces—these figures indicate a reduction in silver output of 170,302 fine ounces.

WORLD PRODUCTION. The world production of silver in 1916 was 156,626,521 fine ounces, valued at $107,519,408. Of the total production 122,712,628 came from the mines of the United States, Canada, and Mexico. In South America there were produced 11,839,822 ounces; in Europe, 8,591,029; in Asia, 5,840,867; and in Australia, 3,863,418. The industrial consumption of silver in 1916 throughout the world was valued at $24,083,644. An estimate for 1917 for the world was approximately 167,000,000 oz. based on the assumption that the amount produced outside of the United States increased 10,000,000 oz.

An unique consideration, however, in connection with silver in 1917, was the demand which naturally affected prices which rose to a point higher than for forty years. Furthermore, this demand was affected by government control so that the markets of the world in a way were restricted. The tendency to rise in the silver market was first manifested in 1916 and by June a price around 75 cents per ounce was recorded. At this time purchases were being made for the Far East for coinage purposes, and a few weeks later by the Russian government for shipment to Vladivostok. Inasmuch as Great Britain and the United States were unwilling to release gold for export, silver was forced to the Far East for the purpose of paying the increased balance of trade due to good crops and higher prices. This condition was responsible for the gradual mounting of silver during 1917 to a price of 79.010 cents in New York, the average for July, then to 85.407 cents, the average for August, and 100.740 cents, the average for September, the highest quotation recorded during the latter month being $1.08½ in New York and 55 pence in London.

SIMMONS COLLEGE. A non-sectarian institution for the education of women, located at Boston, Mass. In the fall of 1917 there were 1035 students and 119 members of the faculty. Volumes in the library numbered 27,531. Productive funds in 1917 amounted to $2,290,266 and the income therefrom to $83,149. A residuary bequest of $12,500,000 was received from the estate of Miss Helen Collamore. Simmons College was founded in 1899. President, Henry Lefavour, LL.D.

SIMS, WILLIAM S. Vice Admiral, U. S. N., ranking American naval officer abroad and in command of the United States destroyers operating in European waters. He was born at Port Hope, Canada, in 1858, and graduated from the United States Naval Academy in 1880. He served on the North Atlantic, Pacific, and China stations and from 1897 to 1900 was naval attaché to the embassies at Paris and St. Petersburg (Petrograd). While holding this position he was intrusted with the buying of ships and supplies for the United States Navy. In 1902-09 he was inspector of target practice at the Bureau of Navigation and during the last two years of this period was also naval aid to the president. He then commanded the *Minnesota* in 1909-11, was a member of the War College, 1911-13, and from 1913 to 1915 commander of the torpedo flotilla of the Atlantic fleet. In 1915 he was assigned to command the new dreadnaught, *Nevada*. In 1916 he was made president of the Naval War College and commandant of the Second Naval District. In August, of the same year, he was made a rear admiral. Just before war was declared on Germany he was sent abroad as a special representative and observer. After the war began he immediately entered into conferences with British and French naval officials as to the best methods of naval coöperation between the nations at war with Germany. When it was decided to send American warships abroad, Admiral Sims was put in charge of the operations of these craft. In recognition of his services rendered since he went abroad he was appointed vice admiral.

SINGAPORE. See STRAITS SETTLEMENTS.

SINN FEIN. See GREAT BRITAIN, *History*.

SIOMINE. An iodine preparation containing 78.5 per cent of this element. Its chemical name is hexamethylenamine tetraiodide $(CH_2)_6N_4I_4$. Its therapeutic effects and dosage are the same as those of potassium iodide, and the advantage claimed for it is that it can be administered in solid form. Siomine is a red powder, having an odor and taste peculiar to itself.

SKATING. The international outdoor championships in 1917 were held at Saranac Lake, N. Y. The winners of the principal races were: 220 yards, Edward Horton, Saranac Lake; three-quarter mile, Sigurd Larsen, Chicago; one mile, Sigurd Larsen, Chicago; two miles, Arthur Staff, Chicago; three miles, Arthur Staff Chicago. In the indoor championships held at Pittsburgh, Pa., Staff captured the quarter-mile, half-mile, three-quarter mile, one mile, and three-mile races. Special races were contested during the year in the rinks of the various large cities, New York, Pittsburgh, and Boston giving an especially large patronage to these events. The popularity of skating as a recreation was again attested by the large number of new rinks and ice palaces opened during 1917.

SLAVONIA. See CROATIA AND SLAVONIA.

SMALLPOX AND VACCINATION. There are apparently still some persons who believe that the administration of vaccine matter by mouth will confer immunity to smallpox, in the same way as by the ordinary method. The futility of this belief has been shown before, but Garrison has experimented with the method again, and proved its utter worthlessness. Twenty-five persons were given vaccininum by the mouth and twenty of them were subsequently proved to be unprotected, since vaccination by the ordinary scarification method was successful in each case. The simple reason for introducing vaccine material directly into the tissues is that when introduced into the stomach the material is digested and robbed of its specific properties before it can be absorbed. See VITAL STATISTICS.

SMITH COLLEGE. A non-sectarian institution for the education of women, located at Northampton, Mass. In the fall of 1917 there were 1946 students and 205 members of the faculty. Volumes in the library numbered 67,647. Productive funds in 1917 amounted to $2,242,591 and the income therefrom to $162,-

195. The college was founded in 1871. President, William Allen Neilson.

SMITH-HUGHES ACT. See Agricultural Education.

SMITHSONIAN INSTITUTION. The secretary of the institution, Charles D. Walcott, in his report for the year ending June 30, 1917, reviewed the affairs of the institution proper and the operations of its several branches. A separate article will be found on the United States National Museum (including the National Gallery of Art and the Freer Art Gallery). The total permanent funds of the institution, when the report was issued, were $1,052,134. The income for the year amounted to $133,360 and the disbursements, $124,127, leaving a balance of $9232. The institution was charged by Congress with the disbursement of appropriations amounting to $581,500 for the year ending June 30, 1917. The secretary, Mr. Wolcott, made geological investigations in the Canadian Rocky Mountains obtaining interesting and important results, his work being illustrated by a large number of photographs. He found the line of demarcation between the Lower and Middle Cambrian to be high up in the section on the face of the cliffs at Wonder Pass, and throughout the Assiniboine massif. Dr. George P. Merrill visited the gem and feldspar quarries in Maine, adding interesting material to the mineral exhibit of the National Museum. Dr. R. S. Bassler and Mr. C. E. Resser made investigations in western Maryland, proving that graptolites—extinct organisms useful in determining the age of geological formations which contain few and often no other kinds of fossils—were the key to the geologic structure of the region. Dr. Bassler successfully explored the Ohio Valley for fossil algæ and coral reefs, securing an excellent exhibit for the museum. Examination by Dr. Hrdlička, of the museum, of human remains that were found at Vero, Fla., and believed to be of extreme age, proved to be decidedly against that belief. Similar conclusions were arrived at in the investigation of human remains found at Demere Key, Fla. John B. Henderson and Dr. Paul Bartsch brought from Eastern Cuba and Haiti many interesting specimens of land and fresh water mollusks, several new birds, some very interesting cacti and other plants, and a general invertebrate collection. A. S. Hitchcock made botanical explorations and discoveries in the Hawaiian Islands, especially among the grasses, and Arthur deC. Sowerby successfully continued his biological work in northeastern China. Dr. W. L. Abbott made an interesting natural history collection in Santo Domingo; H. C. Raven continued to make natural history and ethnological collections in Celebes, Dutch East Indies; and early in 1917 an expedition with the title of the Collins-Garner Congo Expedition left in the interests of the Smithsonian Institution for the French Congo and the neighboring parts of West Africa. An expedition for taking measurements of solar radiation in South America was prepared, but owing to war conditions it was delayed, being temporarily located at Hump Mountain, N. C., in May, 1917. The process invented by F. G. Cottrell for the electrical precipitation of suspended particles, the patents for which are administered commercially by the research corporation, is now in successful use by a score of smelting and refining companies. The National Research Council, whose members include several of the staff of the National Museum, continued in 1917 to organize scientific investigations concerning the national defense and industries affected by the war. Dr. George E. Hale, Dr. Robert A. Millikan, and Dr. Cary T. Hutchinson were active in the executive and administrative part of this work. Of the series of *Smithsonian Contributions to Knowledge* one memoir was published, entitled "A Contribution to the Comparative Histology of the Femur," by Dr. J. S. Foote. Of the series of *Smithsonian Miscellaneous Collections* nineteen papers forming parts of five volumes were issued. The *Smithsonian Annual Report* for 1916 was not received before the close of the year on account of the unusual amount of war printing at the Government Printing Office.

In 1917 the library contained more than 500,000 bound volumes and pamphlets. More than 9000 new titles were added during the year. Dr. John Donnell Smith, of Baltimore, donated the whole of his botanical library to the institution, and a large part of it was housed during the year. The Museum Library received 5128 volumes and pamphlets. A reception for the French Scientific Mission to the United States was held in the Smithsonian Building on the evening of June 14, 1917. For the activities of the Bureau of American Ethnology, see the article Anthropology. The International Exchange Service handled during the year 268,625 packages of governmental and scientific publications. The National Zoölogical Park reported 1,106,800 visitors, a daily average of 3032. Mr. Ned Hollister succeeded in office Dr. Frank Baker, superintendent of the park for twenty-six years. On account of the war it was found practically impossible to complete the preparation of the International Catalogue of Scientific Literature. Part of it, however, was published by the Central Bureau at London, which brings the total number of volumes published since 1901 up to 216 volumes containing about 3,000,000 references to current scientific periodicals.

Henry White, of Maryland, was appointed to the Board of Regents to succeed Dr. Andrew D. White, of New York, who resigned.

SNOWFALL. See Meteorology.

SOCCER. See Football.

SOCIAL ECONOMICS. The development of economic and sociological sciences in recent years has shown an increasing tendency to lay stress upon the welfare aspects of industrial organization and social conditions. Under the influence of the democratic ideal and stimulated by the increasing importance of organized labor, together with the growth of emphasis upon social service and the doctrine of trusteeship in the ownership and management of wealth, increasing attention has been given to problems of distribution of wealth, greater justice in methods of taxation, protection of women and children from long hours, low wages, and other exploitative conditions of industry, the reduction of poverty and crime, and the development of a normal life for all members of society. Consequently social economics has carried on investigations into causes and consequences of long hours, low wages, and other evil conditions of industry; bad housing and lack of recreation; alcoholism; prostitution and crime; poverty and inefficiency. It has laid less emphasis upon the quantity of goods produced and more on the conditions of production and the distribution of the product. Social economists have been active in promoting labor and other welfare legislation and have strongly favored the extension of the activities of government and a strengthening and perfecting of governmental administration. Other matter of interest in this field will be found in the following headings: CHILD LABOR; LABOR; LABOR LEGISLATION; MINIMUM WAGE; OCCUPATIONAL DISEASES; OLD AGE PENSIONS; PENSIONS FOR MOTHERS; PROSTITUTION; WOMEN IN INDUSTRY; WORKMEN'S COMPENSATION.

BIBLIOGRAPHY. B. D. Bogen, *The Extent and Scope of Jewish Philanthropy;* J. B. Hurry, *Poetry and Its Vicious Circles;* C. J. Galpin, *The Country Church an Economic and Social Force;* Edith Abbott and Sophonisba P. Breckinridge, *Truancy and Non-Attendance in the Chicago Schools: A Study of the Social Aspects of the Compulsory Education and Child Labor Legislation of Illinois;* P. Mukherji, *The Coöperative Movement in India;* C. D. Thompson, *Municipal Ownership;* P. T. Sherman, *Criticism of a Tentative Draft of an Act for Health Insurance* "submitted for criticism and discussion by the committee on social insurance of the American Association for Labor Legislation"; H. F. Ward, *The Labor Movement from the Standpoint of Religious Values;* L. T. Beman, *Selected Articles on Prohibition of the Liquor Traffic*, 2d rev. ed.; H. M. Bennett, *Women and Work; The Economic Value of College Training;* J. M. Brewer and R. W. Kelly, *A Selected Critical Bibliography of Vocational Guidance;* G. R. Davies, *Social Environment;* E. E. Eubank, *A Study of Family Desertion;* M. E. Richmond, *Social Diagnosis;* Winifred S. Gibbs, *The Minimum Cost of Living;* Horatio M. Parker, *City Milk Supply;* Frederick C. Howe, *The High Cost of Living;* Grace Abbott, *The Immigrant and the Community;* Mary K. Simkhovitch, *The City Worker's World;* F. Stuart Chapin, *An Historical Introduction to Social Economy;* Vida S. Scudder, *The Church and the Hour;* Chas. S. Bird, Jr., *Town Planning for Small Communities;* Newell L. Sims, *Ultimate Democracy and Its Making;* Randolph Bourne, *Education and Living;* Mary Van Kleeck, *A Seasonal Industry;* B. L. Hutchins, *Women in Industry;* Annie M. McLean, *Women Workers and Society;* Augusta F. Bronner, *The Psychology of Special Abilities and Disabilities;* Frances Stern and Gertrude T. Spitz, *Food for the Worker.*

SOCIAL HYGIENE. See PROSTITUTION.

SOCIAL INSURANCE. Since the enactments of the social insurance measures in Great Britain in 1911, there has been a rapid growth of opinions favorable to them and extension of public action along similar lines in the United States. The growth of workmen's compensation, together with widespread public interest in the prevention of accidents and diseases, has been the chief result of this agitation. There has, however, been an increasing conviction that it would be desirable for the community to assume through insurance measures a large proportion of the burden of sickness, unemployment, and old age. Social investigation has shown that among the chief causes of poverty are industrial accidents and disease, invalidity (due also in large part to industrial casualties), the deteriorating effects of sickness and of unemployment, the helplessness of old age, and the burden which rests upon the families of the poor in case of death, especially of the mother or the chief breadwinner. Now all of these events, while they are more or less inevitable in human affairs, nevertheless occur in such a manner that they each constitute a proper field for the application of insurance principles. It is believed that in this manner a very large proportion of existing poverty might be prevented. Thus the family that sinks into poverty and crime and is set adrift because the father and husband is unemployed could be held together on its normal plane of living provided an insurance fund were available for its support during the inevitable periods of industrial slackness (see UNEMPLOYMENT). A similar argument applies to occupational diseases (q.v.); industrial accidents (see WORKMEN'S COMPENSATION); and to a large extent the same is true of the indigence of the aged (see OLD AGE PENSIONS).

In this country the term social insurance has connected itself primarily with the idea of health. The first advances in this field were made in Massachusetts and California where investigating commissions were authorized in 1916 to report in January, 1917. The reports of these commissions were not followed by legislation but the commissions were continued. In addition, investigations were provided for by Connecticut, Illinois, New Jersey, Ohio, Pennsylvania, and Wisconsin. In Connecticut the scope of the investigation is to include old age pensions, sickness insurance, minimum wages, unemployment, and the improvement of country life. In Illinois and Pennsylvania the investigation bears primarily upon health, but includes sickness or accidents not covered by the compensation laws. In New Jersey a commission considering old age dependency found workmen's health a preliminary problem. In Ohio the commission will investigate health insurance, sickness prevention, and old age pensions; whereas in Wisconsin the commission is instructed to "thoroughly investigate the subject of social insurance," no restrictions being placed on its scope. Most of these commissions are authorized to compel the attendance of witnesses. In all States appropriations were made: in Illinois, $20,000; Ohio, $25,000; Pennsylvania and Wisconsin, $5000; Connecticut, such sums as are granted by the board of control. Health insurance measures were introduced in at least a dozen States in 1917.

COMMISSION REPORTS. The California Commission, which issued a most extensive report, was unanimously agreed that health insurance was the logical and the most practical step in social reform following workmen's compensation and that all efforts should be concentrated upon problems connected therewith. It said, "In order to meet the problems of destitution due to sickness, and in order to make health insurance a valuable adjunct to the broad movement for the conservation of public health, any legislation on this subject should, in the opinion of the commission, provide (a) for a compulsory system for the conducting of the insurance by non-profit making insurance carriers; (b) for a thoroughly adequate provision for the care and treatment of the sick, and (c) for contributions from the insured, from industry and from the State." Governor Hiram W. Johnson strongly commended the work of the commission and expressed the strongest approval of the principle of health insurance. Owing to the probability that a compulsory contributory health insurance act would be declared unconstitutional by the California courts both houses of the legislature passed a constitutional amendment thereafter submitted to the people for ratification in which it was declared that "it is the policy of the State of California to make special provision for the health and welfare of those classes of persons and their dependents, whose incomes, in the determination of the legislature, are not sufficient to meet the hazards of sickness. The legislature may establish a health insurance system, applicable to any or all such persons, and for the financial support of such system may provide for contributions, either voluntary or compulsory, from such persons, from employers, and from the State by appropriations."

Members of the Massachusetts Commission represented a greater diversity of opinion. They were unanimous in endorsing the principle of health insurance and a majority approved the main features of the bill introduced on the State legislature by the American Association for Labor Legislation. This majority held that in order to be effective a sickness insurance law must be compulsory and must distribute its costs among employer, employee, and the State. The majority of the commission also agreed that private stock companies operating for profits must be definitely excluded from the field of health insurance. It favored the carrying of health insurance by mutual associations controlled by an equal representation of employers and workmen. A striking event of the year was an inaugural address to the legislature in January by Governor Samuel W. McCall urging the enactment of a compulsory health insurance law. He said, "I am strongly of the opinion that there is no form of social insurance that is more humane, sounder in principle, and that will confer a greater benefit upon large groups of our population and upon the commonwealth as a whole than health insurance." Throughout the year there was much discussion of the subject of health insurance in Massachusetts, especially among physicians, employers, and trade unions. While opinion generally favored the principle there was hopeless disagreement as to the details of organization. The commission charged with the preparation of a bill consequently came to favor a measure providing for the extension of public health activities to include the care at public expense of all school children. It was believed that the experience under such a measure together with the education of the community thereby achieved would make possible the enactment of a measure for the insurance against sickness of adults of the working class.

OTHER DEVELOPMENTS. Much attention was given to the problem by the Medical Association and by State and local bodies of medical men. Trade unions likewise actively discussed problems of sickness insurance. The American Federation of Labor had in 1916 condemned sickness insurance by companies seeking profit. But President Gompers was strongly opposed to compulsory insurance by State authority. On the other hand, many of the most important labor leaders were favorable, including John Mitchell, James M. Lynch, James Duncan, and William Green, the first two connected with the New York State Industrial Commission and the last two with the American Federation of Labor. The National Women's Trade Union League, at its convention in June, strongly approved health insurance including maternity care. Similar resolutions were passed by various State and local organizations. Manufacturers were on the whole opposed, primarily on account of the cost which must largely be borne by business. The American Medical Association at its meeting in June declared that efforts must be made to safeguard the interests of the medical profession in the enactment of sickness insurance and insisted that such laws should provide for freedom of choice of physician, payment in proportion to work done, the separation of medical supervision from the daily care of the sick, and for the adequate representation of the profession on administrative bodies.

SOCIALISM. **STOCKHOLM CONFERENCE.** One of the most widely debated subjects of the year was the Socialist proposal of a peace congress, including representatives from the fighting nations, to be held at Stockholm. The proposal was made at the instance of the Russian Council of Workmen's and Soldiers' Delegates who published on May 30 an appeal for the reassembling of the International and for the calling of a peace conference. Thereupon (May 30) the Austrian and German Socialists drew up a peace programme of which the main points were as follows: 1. No annexations. 2. No indemnities. 3. The Slav countries of the south and the Austro-Hungarian crown lands to remain in the dual monarchy, but the Socialists to support the efforts of the populations to obtain self-government. 4. Finland and Russian Poland to form independent states, and Galicia to be self-governing under the sovereignty of Austria. 5. Restoration of commerce on land and sea, modification of the productive system, completion of an international administration for all sea routes and interoceanic canals, and construction and administration of railways on an international basis. 6. Return to the maritime principles established by the Treaty of Paris in 1856 especially as regards the prohibition of the capture or arming of merchant vessels. The programme further opposed the annexation of Belgium; favored an independent Serbia, which, joined to Montenegro, should have an outlet to the sea; and declared that the Balkan states might arrange their own affairs without the interference of the other powers. It made no mention of Alsace-Lorraine. At the same time the Social Democratic majority in Germany set forth a programme including limitation of armaments, compulsory arbitration, the "open door" for colonies, free trade, and democratic control of diplomacy; while the German minority Socialists included in their peace aims the restoration of Belgium and Serbia, an independent Poland, and a plebiscite for Alsace-Lorraine.

In the Entente countries the question of giving passports to delegates was the subject of long and acrimonious debate. In France, where the Socialist party had gradually been won over to views formerly held only by the minority (see FRANCE, *History*, and SOCIALISM in preceding YEAR BOOK) the Socialist National Council decided to send delegates to Stockholm, thus raising the question whether the government should grant passports. To this there was strong opposition. A bill was introduced in parliament providing that whoever forms, or tries to form, an agreement, or who enters into negotiations of a political, diplomatic, military, economic, or social nature without regard to the constituted authorities of the country, either with the subjects of an enemy power or with a body comprising enemy members, shall be punished by five years' imprisonment and a fine of from 10,000 to 50,000 francs. Political opinion, however, was not altogether hostile to the sending of delegates to Stockholm. Some argued that it would be an advantage not to leave the Russian revolutionists at the mercy of the Germans who, they said, were past masters in the art of leading their comrades in foreign countries by the nose, and they favored some sort of a conference in which the Russian revolutionists would take the initiative and in which the question of responsibility for the war should be squarely put. On the day after the Nationalist Congress the following presentment of this side of the case was published: "The Russian army, being convinced that the purposes of the government in regard to the war were the purposes of the army also, wishes to have the same assurance in regard to the purposes of the Allied governments. The Russian soldiers think that the Allies ought not to hesitate to declare their objects in fighting, in contrast to the objects of the Central Powers. If the Central Powers hesitate to start a revolution in their own countries and if they do not oblige their governments to renounce their imperialist aims, the power of the democratic armies of the Allies will be decisive. To the extent that the French Socialists give as they did yesterday proofs of complete accord with the Russian Revolution, they reënforce the Russian army itself. It is to aid Kerensky in his championship of the war." On June 1, M. Ribot declared that the government would not issue passports to the delegates, and that passports would be issued for Petrograd only when it was certain that there would be no meeting with enemy delegates. This announcement was received by the chamber with enthusiasm. M. Ribot declared that in peace negotiations no party can take the place of the government. Peace could come, he said, from victory alone; and it must be a French peace, in the interest of all France, and not merely in that of a particular party. On June 4 the delegates from the German Socialist majority, under the leadership of Herr Schiedemann, arrived at Stockholm. Their spokesman declared that he had little hope that peace would result from this conference, but since all the world desired peace they had come there in the hope of obtaining it and that, even if they failed, they would at least have given an impulse to the pacifist movement. The point of view of the German Socialists in regard to the Stockholm Conference was set forth in the Reichstag in a report of Herr Schiedemann on June 26. He said that the Stockholm negotiations had not taken the desired form in all respects. Everywhere attempts were being made to arouse distrust of the German Social Democracy whose members were described as war agitators in disguise and as mere tools of German Imperialism. He complained that the press everywhere misrepresented this peace movement on the part of the German Social Democrats. Nevertheless he believed that many misunderstandings on both sides had now been removed and he concluded by saying that the government was wrong in offering bit by bit to the Russians more favorable terms for a separate peace; it should now prove to the world by its actions that it is sincere in its new attitude toward peace. In Great Britain (q.v.) the majority of the Labor and Socialist parties favored the sending of delegates to the conference, but the government was unwilling to grant passports; and the same was true of the attitude of the Socialist party and the government in the United States. See WAR OF THE NATIONS, *Diplomacy of the War*. At the close of the year discussion of the subject was going on in all the countries concerned.

FRANCE. The Socialist congress at Bordeaux in October showed that the views which in the beginning were held only by a minority were now the prevailing ones. Divisions in the party continued, however, in spite of the effort to bring about more complete unity. The meeting could not frame a resolution upon which all would agree. It passed a majority resolution and a minority resolution and there was an effort made by a group to amend the minority resolution. The main points indicating the attitude of each group are as follows:

The majority resolution declared for the Stockholm conference, for national defense, for voting the credits of the war and for conditional participation of Socialists in the government. The minority resolution declared that the Socialists were loyal to national defense but did not approve voting credits to the government if the war ceased to be a defensive war; and they declared in favor of a peace without annexations or indemnities. To this resolution the small group that represented the point of view of the Kienthal congress offered an amendment demanding that the Socialists in parliament should vote against any military credits in order to show their desire for an immediate peace without annexation. The majority resolution was carried by 1552 votes; and the minority by 831. The amendment showing the point of view of the Kienthal group received 118 votes, 85 being absent. The situation was about the same as it had been before. The aim of the congress, namely, to fuse the two principal groups into a solid mass, was not realized. On the other hand, there was no definite break. The majority resolution was very long and in some respects vague, probably for the purpose of offering a compromise which should draw as many votes as possible. As to the question of taking part in the government, the majority resolution did not take a final stand in that matter. It deferred to some later time the consideration of the principle, but it declared that the Socialist party did not refuse systematically to bear its part in responsibilities of government, provided that this participation followed a discussion of policy on the part of the prime minister with the Socialist members of parliament. Another part in the resolution was a programme amounting to the crisis of a war committee and the strict parliamentary control over the armies.

GERMANY. For two years German socialism had been divided into two groups. The majority under Schiedemann firmly supported the government. It did not concern itself with pacifist theories but gave its attention to internal reforms. It sought to realize the aims of socialism in the economic field and to secure certain advantages in the way of democratic control. Following this course it did not wish to come in conflict with the government. The minority under Haase and Ledebour made up at first only a small fraction of the deputies. It was organized under the name of Independent Social Democratic Party. This group preached international socialism as in the past and remained loyal to the ideal of the class conflict. It appealed to the popular desire for peace in the hope of furthering a democratic programme. It did not believe in the value of concessions on the part of the government. Critics pointed out that as a matter of fact there was not at bottom much difference between these groups for they were above all German and they both played the game of the Imperial government. The main point of difference was that while the majority desired a peace honorable to Germany the minority insisted on an immediate peace which would make it possible for them to force the government to give way on certain points. The minority did not condemn the present war as a German war but it condemned war in general. Capitalism in all nations was, in their opinion, the real enemy.

Spain. In June the Socialist group at Madrid passed by a large majority a resolution, of which the main points were as follows: It condemned the work of the German agents in Spain and accused them of poisoning public opinion, and it declared the German Empire solely responsible for the war. It condemned the brutal methods employed by the Central Powers without regard to the laws of humanity and specifically the submarine activity of the Germans in Spanish waters. It declared that the German Empire treated Spain as if it were a hostile country and that, inasmuch as the Spanish government had taken no action towards supporting the German spy system and attacking the submarine policy, it seemed to the Allies to be an accomplice of Germany. While it was not the duty of the Socialist party to tell the government that the moment had come for breaking with Germany they would condemn the government both for injuries to the cause of the Allies and for the sufferings of the Spanish people if it did not take all the necessary measures. The Socialist party declared that the defeat of German Imperialism was not the only thing needful; it was equally necessary that the masses in all nations should work together for the destruction of imperialism everywhere in the world; it was also absolutely necessary that the masses of all countries should struggle to restore the International purged of those elements, which during the war had shown themselves unworthy. To do this as soon as possible was necessary in order to bring about the defeat of capitalism and the socialization of the means of production.

Switzerland. The Swiss Socialist, Robert Grimm, who it was said early in the war had tried to bribe the Italian Socialists to maintain Italian neutrality and who was chief mover of the Kienthal and Zimmerwald conferences, appeared at the Stockholm conference as an advocate of peace. He was believed to be the spokesman of the German government, whose views were communicated to him by Mr. Hoffmann, member and at one time president of the Swiss Federal Council, who was then serving as minister for foreign affairs. The incident as reported in the press was as follows: On June 5 the Swiss minister at Petrograd received from the home foreign office a telegram saying that Mr. Hoffmann authorized him to declare to Robert Grimm orally that Germany would not take the offensive so long as there seemed a possibility of coming to terms with Russia; and the minister was to add: "After conversations with an important personage I am convinced that Germany aims at a peace, honorable to both countries which would include close commercial and economic relations, and financial support that would place Russia on her feet, without any intermeddling with her internal affairs, also a complete accord on the subjects of Lithuania, Courland, and Poland, having regard to the racial character of the people. Germany would restore the occupied provinces, and Russia in return would give back the provinces she had taken from Austria-Hungary." On the publication of this telegram in a Stockholm newspaper, Mr. Hoffmann resigned, offering as an excuse for this action that he had taken it merely in his capacity as a private citizen.

Russia. Before the war there were two marked tendencies in Russian socialism which may be called social revolutionary and social democratic. These tendencies appeared not only in theory but in practice. Starting out with entirely different assumptions they attained entirely different practical results. From the theoretical point of view the revolutionary Socialists started with a view of history as a result of human will—man's free will—and not a mere succession of material events. The Social Democrats on the contrary, in accordance with the doctrines of Marx, held the opposite view; that is to say, that historical events developed in accordance with the laws of evolution to which men must submit. According to the revolutionary Socialists, economic development in Russia must be made to take a different line from that which it had taken in western Europe. Western Europe was industrial and capitalistic; Russia was agricultural; therefore the basis of Russian socialism must be found in the agricultural working class. The Socialist ideal was the holding of land in common and in Russia this ideal was to be attained without passing through the industrial and capitalistic stage. The Social Democrats held the precisely opposite view; namely, that the economic development of Russia must proceed in the same manner as in western Europe. As to political tactics, they too differed. The revolutionary Socialists devoted themselves especially to the study of agricultural questions and they had become largely a party of small farmers and peasants. The Social Democrats opposed this programme and, acting on what they regarded as more purely Socialist ideas they gave all their attention to the industrial classes. See articles on countries mentioned; also International Peace and Arbitration; New York; United States; War of the Nations.

SOCIALIST PARTIES. See Socialism; and articles on the United States, and foreign countries.

SOCIAL WORKERS, National Conference of. See Charities.

SOCIETY OF CHEMICAL INDUSTRY. See Chemistry, Industrial.

SOCIOLOGY. In addition to the matter below, material of similar interest will be found under the following headings: Social Economics; Political Economy; Charities; Labor; Penology; Prostitution; and Relief for War Victims.

American Sociological Society. The 12th annual meeting of this organization was held at Philadelphia, December 27-29. The general subject was "Social Control." The first session was held jointly with other bodies as described under Political Economy. The first special session was devoted to the general topic of "Agencies and Fields of Social Control," with addresses by Dr. S. P. Breckinridge, of the University of Chicago, Allen T. Burns, of the Cleveland Foundation, and Professor Carl Kelsey, of the University of Pennsylvania. The second general topic was "Primitive Social Control," with addresses by Professor Hutton D. Webster, of the University of Nebraska, Professor F. Stuart Chapin of Smith College, Dean J. E. Carter of Western Reserve University, and Professor Frank D. Speck of the University of Pennsylvania. On the general topic of "Social Control of Wealth," papers were prepared by Professor E. C. Hayes of the University of Illinois, and by Professor Carleton H. Parker of the University of Washington. Another session was devoted to the general topic "Social Control of Immigration," with addresses by Professor H. P. Fairchild of Yale University, Miss Grace Abbott of the Children's Bureau, and Professor A. J. Todd of the University of Minnesota. The last special session was devoted to "Social Control of Political Relations" with the following papers: "A Social Control in a Democracy" by Professor F. H. Giddings of Columbia; "Social Control in International Relations" by Professor C. H. Cooley of the University of Michigan; and "How Far May Social Control in International Relations be Democratized," by Miss Jane Addams, of Hull House, Chicago. There was a final joint session with the Economic, Political Science, and Historical Associations with the following addresses: "The British Commonwealth," by R. H. Brand of the British War Mission; "The Pan-German Use of History" by Professor Wallace Notestein of the University of Minnesota; and "Economic Alliances" by Edward P. Costigan of the United States Tariff Commission. All the above addresses with discussions thereon will be published in the *Papers and Proceedings* in April, 1918. The society also coöperates in the publication of the *American Journal of Sociology*.

Southern Sociological Congress. The 6th annual session of this Congress met at Asheville, N. C., in August, with representatives present from 26 States. So widespread has become the interest in this conference and so extensive the scope of its activities that it has become a socializing force of the first importance throughout the entire South. It has assisted in creating a mutual understanding of the races; has stimulated every sort of movement for community betterment from the cleaning up of alleys to complete community programmes; has strengthened the activities of the Y. M. C. A. and Y. W. C. A., the rural church, and social centres; has forwarded the movement for labor legislation protecting women and children; has created an interest in coöperating activities in agriculture, dairying, poultry raising, and the marketing of farm products as well as the coöperation of consumers. The congress created special committees on "war-time relations to the man in uniform," and "relief and social work." In addition there was a thorough reorganization through the establishment of an executive committee and governing board, thus coördinating the various branches of interest. The congress also provided that J. F. McCulloch, its former executive secretary, should give his full time as educational secretary for the primary purpose of carrying on extension work. Special attention was given to the problem of negro migration. It was estimated that at least 250,000 negroes had gone north during the past year. It was indicated that this was due to bad economic conditions and increasing race friction, and numerous addresses dwelt upon the necessity of the two races coming together in conference for the purpose of reaching mutual understanding.

The Sagamore Sociological Conference was held in the closing days of June. The main topic was "Democracy and Business" but much attention was given to questions raised by the war. In an address on "Distribution and Democracy" Mr. William H. Ingersol declared that the wage earner is more widely exploited by our uneconomical system of distributing goods from producer to consumer than he is as an employee. The President of the Woman's Trade Union League, Agnes Nestor, made an address on "Conserving Our Human Resources"; Professor H. F. Ward, on "The Service Motive in the Business World." The former advocated putting humanity first in war appropriations and the latter favored the elimination of profit seeking in business and its replacement by the motive of social service. The resolutions of the congress favored the war in so far as it advanced the cause of democracy throughout the world and would result in the intensification of altruistic as over against selfish motives for activity.

Bibliography. R. M. MacIver, *Community. A Sociological Study, Being an Attempt to Set Out the Nature and Fundamental Laws of Social Life;* Carl Kelsey, *The Physical Basis of Society* (1916); Henry Pratt Fairchild, *Outline of Applied Sociology* (1916); C. A. Ellwood, *An Introduction to Social Psychology;* V. Pareto, *Traité de sociologie générale;* E. Ferri, *Criminal Sociology;* papers and proceedings of the eleventh annual meeting of the American Sociological Society, held at Columbus, Ohio, December 27-29, 1916, under title *The Sociology of Rural Life;* Walter R. Smith, *An Introduction to Educational Sociology;* L. Newell, *Ultimate Democracy and its Making;* Mary E. Richmond, *Social Diagnosis;* Havelock Ellis, *Essays in War Time;* M. L. Rowntree, *Coöperation or Chaos;* G. R. Davies, *Social Environment;* Thorstein Veblen, *The Nature of Peace;* Frederick Naumann, *Central Europe*, tr. by Alfred A. Knopf; Rt. Hon. J. M. Robertson, M.P., *War and Civilization;* Eliza B. Gamble, *The Sexes in Science and History;* Elsie Clews Parsons, *Social Rule;* C. Gasquoine Hartley, *Motherhood;* Correa M. Walsh, *Socialism and Feminism;* A. W. Calhoun, *Social History of the American Family;* George L. Beer, *The English Speaking Peoples;* Walter S. Athearn, *Religious Education and American Democracy.*

SODIUM NITRATE. See Chemistry, Industrial.

SOILS. In his attempts to respond to the patriotic appeal for increased food production with insufficient and high-priced fertilizer and in many cases shortage of labor, the farmer has realized as perhaps never before the importance of careful adaptation of crops to soils and of close study of the actual fertility deficiencies and requirements of soils. The accurate knowledge on this point accumulated during many years was put to good use since the great war began, and especially during the year 1917, in increasing food production.

For this purpose the soil surveys were of great value. In many countries these were temporarily discontinued or were continued in a less thorough and systematic way than formerly. In the United States, however, such work progressed without interruption and with increased thoroughness and activity. During the year ended June 30, 1917, the U. S. Bureau of Soils, coöperating with State institutions, surveyed and mapped the soils of 81 areas in 32 States, aggregating 37,225 square miles, or 23,824,000 acres of land. This was about one-fourth of the strictly agricultural area of the United States. In addition, reconnoissance surveys were made of two areas of desert and mountainous regions in one State, aggregating 9182 square miles or 5,876,480 acres, bringing the total area so surveyed up to 493,494 square miles or 315,836,160 acres.

Realizing the necessity for making the greatest possible practical use of these surveys, a careful study was being made of them to determine the soil most productive of the staple crops. Special attention was given during the past year to questions regarding garden soils growing out of the agitation for so-called "war gardens." The value of these surveys from the farmer's standpoint was greatly increased by the fact that they combined broad knowledge of soil conditions over a wide area with specific information regarding local conditions and needs.

Rather comprehensive studies were made of certain soils of South Africa, especially of Rhodesia, Belgian Congo, and Cape Province, with reference to their deterioration as a result of diminished water and nitrogen supply, erosion, and other causes. The general conclusion from these and similar studies in India was that lack of adequate water control was the major factor in the deterioration of these lands. This was a condition which is so widespread and serious as fully to justify the large amount of attention which was being given to investigations on the movement and control of soil water.

Special emphasis was being placed on simple, practical means of quickly increasing the productiveness of soils, such as better use of manure judiciously supplemented with fertilizers, drainage, correction of acidity by liming, good tillage, and rational rotation. The problem was complicated somewhat by the shortage of potash. This made it necessary to increase if possible the availability of the potash already in the soil by such means as adding organic matter, deep and thorough tillage, and liming.

The reclamation of waste lands was receiving special attention in regions where the arable area was restricted, as, for example, in England. The matter was of less immediate importance in the United States. Nevertheless, there were certain minor but widespread phases of reclamation, such as drainage of wet spots in otherwise productive fields and correcting acidity by liming, which in the aggregate constituted a major item in agricultural production.

Renewed attention was given to the practical advantages of partial sterilization as a means of restoring the productiveness of "sick" soils. The treatment of field, garden, and greenhouse soils with antiseptics such as toluene, carbon bisulphide, formalin, and the like lately had been tried in France with distinctly beneficial results and with indications that such treatment was of practical value. Russell reported that partial sterilization by steam heating was extensively practiced in England by market gardeners "both as a cure for sick soils and as a method of killing the soil insects and fungoid pests that cause so much havoc." It also saved the expense of frequent renewal of the greenhouse soils.

Soil acidity continued to receive much attention by investigators, but no exact test for acidity and lime requirement had been discovered, although this was looked upon as one of the most important laboratory tests from a practical standpoint. Acidity had been shown to be due to diverse causes not exactly determinable in all cases by one method. Acid soils had been shown to respond well to insoluble phosphates like raw rock phosphate or bone meal. They would not, however, grow the more important nitrogen gatherers (leguminous crops). The popular belief that green manures increase the soil acidity to any harmful extent had been shown to have no foundation in fact.

It had been shown that loss of sulphur from soil may be a very important factor in the decline of productivity and may become a limiting factor sooner than loss of phosphorus. Sulphur, as well as phosphorus, is required especially by legumes. Hence a normal growth of legumes indicates a sufficient supply of sulphur and phosphorus in the soil.

The beneficial effect which has frequently been noted when soluble iron salts have been added to the soil was explained as due to the fact that the iron normally present in soil is very insoluble and can not be assimilated in sufficient amounts by plants, especially in soils containing large amounts of lime. To be effective, however, the soluble iron salts must be applied close to the plants since they are quickly fixed and rendered insoluble.

There was considerable recent investigation tending to show that maintaining a soil mulch by surface cultivation was not as effective as had been supposed in preventing evaporation and promoting nitrification, and that the beneficial effect observed is mainly due to the destruction of weeds. If this proves to be generally true it would warrant the discontinuance of a large aomunt of expensive tillage.

SOIL SURVEYS. See SOILS.

SOMALI COAST. See FRENCH COAST.

SOMALILAND, ITALIAN. See ITALIAN SOMALILAND.

SOMALILAND PROTECTORATE. A British protectorate on the Gulf of Aden. Area, about 68,000 square miles; population (1911), 302,859, largely nomad Mohammedan tribes. Berbera, Bulhar, and Zeila are the chief ports. Live stock constitutes the wealth of the country. Imports amounted in 1913-14 to £238,218;

exports, £216,596; revenue, £29,646; expenditure, £68,646; grant-in-aid (1912-13), £26,000.

SOMME. A river in France. See WAR OF THE NATIONS, *Military Operations* (*3*).

SOUTH, UNIVERSITY OF THE. A Protestant Episcopal institution for the education of men, located at Sewanee, Tenn. In the fall of 1917 there were 154 students and 28 members of the faculty; more than one-third of the 1916-17 student body joined the colors. Volumes in the library numbered 37,504. Productive funds in 1917 amounted to $436,367. The university was founded in 1857. President and vice-chancellor, Rt. Rev. Albion W. Knight, D.D.

SOUTH AFRICA, UNION OF. A British colony; a legislative union, under one government, of four provinces. Their areas, according to latest returns, total population, and their white population, with area and population of annexed territories, are shown in the following table:

	Sq. Miles	*Total Pop.*	*Whites*
Cape of Good Hope	206,860	1,553,630	546,162
Bechuanaland	51,524	99,553	14,917
Transkeian Territories:			
East Griqualand	7,594	249,088	7,950
Tembuland	4,129	236,086	8,138
Transkei	2,552	188,895	2,189
Pondoland	3,906	234,637	1,383
Walfish Bay	430	637	32
Total Cape Province	276,995	2,564,965	582,377
Natal	24,866	974,437	95,994
Zululand	10,424	219,606	2,120
Total Natal	35,290	1,194,043	98,114
Transvaal	110,426	1,686,212	420,562
Orange Free State	50,389	528,174	175,189
Total Union of South Africa	473,100	5,973,394	1,276,242

The Bantus numbered 4,019,006 (2,022,949 males and 1,996,057 females), or 67.28 per cent of the total population; mixed and other colored, 678,146, or 11.35 per cent. Cape Town, the seat of the Union Parliament, had, with suburbs, 161,759 inhabitants (of whom 85,442 white); Johannesburg, 237,104 (119,953); Pretoria, 57,674 (35,942); Durban, 89,998 (34,880); Port Elizabeth, 37,063 (20,007); Kimberley and Beaconsfield, 44,433 (17,507); Germiston, 54,325 (15,579); East London, 24,606 (14,899); Pietermaritzburg, 30,555 (14,737).

MINING. The operation of the mines was generally normal throughout 1916. Although many kinds of supplies were obtained with difficulty and many checks due to the war had to be met, the industry was carried on without any critical interruptions. A shortage of native labor and the employment of new natives in August and September slightly checked work during those months. The increased cost of production is attributed by engineers and mining experts partly to the rise in prices of mining supplies and to unprecedented ocean freight rates; to the large sums paid out as allowances to employees on active war service; and to war bonuses allotted to regular workers.

Gold. The gold produced in the Transvaal amounted in 1916 to 9,295,538 ounces. This is an increase over 1915, the return being the highest ever recorded for any one year. At the close of 1916 the Transvaal gold fields had produced 121,219,666 ounces of gold since 1884. The amount milled on the Witwatersrand for 1916 was 28,525,252 tons, 200,000 more than in the preceding year. Employed in the gold mines in December, 1915, were 23,069 white and 223,764 colored laborers, of whom 23,048 white and 223,692 colored were engaged in the Transvaal. The table below shows the output by provinces in 1912 and 1915:

	Fine Ozs.		*Pounds Sterling*	
	1912	*1915*	*1912*	*1915*
Trans.	9,107,512	9,093,902	38,686,250	38,628,437
Natal	1,242	2,461	5,276	10,453
Cape	38	48	162	205
Union	9,108,792	9,096,411	38,691,688	38,639,095

Extensive development of sections of the untouched areas of the Witwatersrand is projected. The government mining engineer states that there is available for leasing on proclaimed ground a total area of 16,842 claims. When the remainder of the reef-bearing land is proclaimed, amounting to 64,863 claims, about 48,000 claims will become available for leasing, bringing the total approximately to 65,000 claims, of which 49,200 claims contain reef at a depth of less than 5000 feet.

Diamonds. The Department of Mines states the diamond production for the Union during 1916 at 2,346,330 carats; output in 1913, 5,163,547 carats; in 1912, 5,071,882 carats. The total production from mines was 2,170,348 carats; alluvial workers recovered 167,620 carats. The value per carat exceeded all values obtained per carat during the last five and one-half years. In December, 1915, 3324 whites were employed in the diamond mines and 8152 colored. The table below shows the output by provinces in 1912 and 1915:

	Carats		*Pounds Sterling*	
	1912	*1915*	*1912*	*1915*
Trans.	2,131,406	35,674	2,386,979	128.067
Cape	2,325,549	66,471	6,190,996	266,198
O. F. S.	614,927	1,241	1,483,544	5,545
Union	5.071,882	103,386	10,061,489	399.810

Coal. An improvement took place in the coal industry during 1916. The total production was 8,281,324 tons in 1915 and 10,007,473 tons in 1916, when 6,136,913 tons came from the Transvaal. The year began with a scarcity of coal cars. Of the 27,000 trucks now in service, approximately 25,000 have been adapted to coal traffic. The failure of the railroads to anticipate the rapid development of the industry occasioned loss to both producer and carrier.

The price of Transvaal coal remained at about the same level throughout 1916 at the port of Cape Town; it rose 24 cents a ton at Durban. The increased demand for fuel caused the Transvaal Coal Owners' Association to refuse to renew its contracts with the railways to supply coal at the old prices. When they were unable to obtain sufficient quantities from the non-associated collieries, the railroads compromised upon an advance of 12 cents per ton: they were more than compensated by an advance in freight rates on coal between certain points. The added importance of this industry is due largely to the abandonment of the Suez Canal route by several of the principal steamship lines in favor of the voyage around the Cape of Good Hope. The large coal deposits in South Africa may influence the maintenance of the present route and encourage shipping to touch at Union ports and to engage in South African trade.

White and colored labor employed in coal mines, 1274 and 24,595 respectively. The table below shows the output by provinces in 1912 and 1915:

	Tons *		*Pounds Sterling*	
	1912	*1915*	*1912*	*1915*
Trans. ..	4,751,850	5.202,805	1,044.986	1,145,060
Natal ..	2,765,068	2,304,116	771.755	782.464
O. F. S..	525,459	727,553	141.380	188,364
Cape ...	74,701	46,850	41,257	26,591
Union.	8,117,078	8,281,824	1,999,378	2,142,479

* Tons of 2000 lbs.

Other Minerals. The total output of copper in the Union amounted to 28,970 tons in 1915 and 22,862 tons in 1916. The Transvaal yielded 14,996 in 1915 and 12,244 tons in 1916. In the Transvaal in 1916 were produced 3263 tons of tin.

AGRICULTURE. Drought continued throughout the 1916 growing period, and cereals were injured. The wheat crop, estimated by the Department of Agriculture at 1,437,000 bags (200 pounds net weight) for the whole of the Union of South Africa, was 26 per cent below that of 1915. The yield in the Transvaal was 24 per cent below normal and in some districts of the Orange Free State it was almost a complete failure. The oat crop was about 51 per cent less than the average in the Transvaal and 22 per cent in the Orange Free State; barley (Union), 14 per cent. Of the yield of corn for the Union in 1915 (10.250,000 bags), the Transvaal and the Orange Free State produced 3,930,926 and 2,123,369 bags, respectively. In 1916 the Union produced 7,056,118 bags. The tobacco crop was estimated by the department at approximately 7,000,000 pounds. Large areas, especially the Transvaal, Swaziland, and Zululand, are adapted to cotton growing. An increased acreage in 1916 indicated the development of the industry. The crop for the 1915-16 season amounted to 500,000 pounds of seed cotton; the 1916-17 crop was expected to yield 1,000,000 pounds. The acreage, said to be more than double that of any previous year, is placed at 7000, of which 4000 acres are in the Rustenburg district, 2000 in the Waterburg, 500 in the Pietersburg, and 500 in other districts not specified.

MANUFACTURES. The following statistics are contained in an article in the *Johannesburg Rand Daily Mail:* Official publication has been made of preliminary tables giving in summary form the principal results of the census of factories and productive industries in the Union for the business year 1915-16. The final results show approximately a gross production at all establishments, excluding railway workshops, of £36,000,000; railway workshops, £4,300,000. The total number of separate factories making returns in the Union is 4047, of which 2006 are in the Cape, 604 in Natal, 1153 in the Transvaal, and 284 in the Orange River Colony. The capital returned as invested in the various provinces was: Cape, £14,941,000: Natal, £10,657,000; Transvaal, £17,533,000; Orange River Colony, £2,334,000; total, £45,465,000.

The average numbers of white persons employed were: Cape, 14,554 males and 2292 females; Natal, 6058 and 626; Transvaal, 12,085 and 1124; Orange River Colony, 1582 and 522; total, 34,279 and 4564. Of the native races, 33,855 males and 383 females are employed in the Union; Asiatics, 10,081 males, 1106 females; other colored, 11,839 males and 3327 females; making in all 90,054 males and 9380 females, or a gross of 99,434. Of the native males the Transvaal leads with 18,550, while Natal has the largest number of Asiatics, with 1095 males and 1095 females. The Cape has a preponderating number of other colored, with 10,656 males and 3238 females. The wages that are paid show largely in favor of the Transvaal. The returns are: Cape, £2,062,000 for white labor and £20,000 for colored; Natal, £1,172,000 and £487,000; Transvaal, £3,110,000 and £673,000; Orange River Colony, £289,000 and £68,000; total, £6,633,000 and £1,248,000. The cost of fuel and light returned in each province was: Cape, £268,000; Natal, £192,000; Transvaal, £722,000; Orange River Colony, £45,000; total, £1,227,000.

In the Union there were 1214 establishments using electricity to the extent of 121,229 horsepower, 689 using 564,664 horsepower with steam, 440 using 5985 horsepower with oil, 181 using 6266 horsepower with gas, and 152 using 3759 horsepower with water. The Transvaal has 430 establishments using 84,634 horsepower, electrical; 226 using 294,956 horsepower, steam; 63 with 500 horsepower, oil; 36 with 1224 horsepower, gas; and 23 with 1387 horsepower, water.

COMMERCE. The total value of the imports and exports of the trade of the Union, exclusive of specie, is shown in the table below, for three comparative years:

	1913	*1915*	*1916*
Imports	£41.828.841	£31,810.717	£40.399,945
Exports	66,569,364	16,664,991	23.759.191

A table of the principal imports for home consumption, and exports of domestic produce, in the 1916 trade, follows, values in thousands of pounds sterling:

Imports	*£1,000*	*Exports*	*£1,000*
Foodstuffs	5,809	Corn	5,280
Cotton mfrs.	5,855	Diamonds	6,602
Apparel	2,882	Wool	486
Hardware	1,896	Feathers	2,311
Leather mfrs. ...	1,709	Coal	2,882
Machinery	2.189	Hides and skins..	1,116
Haberdashery	1,227	Mohair	980
Iron and steel....	1,233	Copper	257
Wood, etc.	1,002	Bark	239
Drugs, etc.	1,164	Tin ore	161
Oils	1,108	Explosives	877
Furniture	518	Fish	529
Glycerine	875	Meats	387
Woolen mfrs.	954	Tobacco	120

In the table of countries of origin and destination below it is of interest to note the large import trade which this country has developed with Japan under war conditions. The commissioner of customs and excise stated in his report that a regular steamship service has been established between Japan and South Africa; during 1916, 100 Japanese vessels, with a tonnage of 430,229, called at Union ports, as compared with 7 vessels, of 19,875 tons, during 1915.

There was a considerable increase in both the import and the export trade with the United States in 1916, due chiefly to the cutting off of commerce with other countries on account of the war. Although the declared value of the goods imported constitutes a record, the actual volume in tonnage is considerably below the figure for some recent years. The average increase in value for 1916 over 1913 is 22.4 per cent, but the volume of imports in 1916 was 22 per cent less than in 1913.

IMPORTS AND EXPORTS, 1916

Imports		*Exports*
£22,744,642	United Kingdom	£15,724,398
1,300,926	Australia	272,720
1,455,625	British India	24,603
866,648	Canada	12,777
170,384	Ceylon	49,678
....	Other British	....
£26,887,053	Totals, British Empire	£17,181,907
166,869	Argentine Republic	28,614
520,688	Brazil	....
277,480	Chile	....
128,203	China	1,458
202,569	Dutch East Indies	4,045
506,302	France	174,058
86,379	Germany	....
284,044	Italy	37
540,884	Japan	14,452
530,097	Netherlands	50
270,114	Norway	....
157,824	Portuguese East Africa	154,967
69,346	Russia	84,781
896,298	Sweden	128
885,898	Switzerland	....
6,075,147	United States	3,172,011
....	Other Foreign	....
£11,542,511	Totals, Foreign Countries	£3,680,342
26,887,053	Totals, British Empire	17,181,907
£38,429,564	Totals	£20,812,249
329,698	South. & North. Rhodesia	607,006
1,640,683	Imports for Colonial Govts.	....
£40,399,945	Totals	£21,419,255
....	Transshipments	2,339,936
£40,399,945	Totals (merchandise)	£23,759,191
785,036	Specie	187,092
£41,184,981	Grand totals	£23,946,283

During 1916, 1789 vessels, of 5,933,234 tons net, were entered, and 1782 vessels, of 5,765,921 tons, were cleared.

Communications. On December 31, 1915, the mileage of the government railway lines totaled 8924, of which 8404 miles were of 3-foot 6-inch gauge, and 520 miles of 2-foot gauge. Of the total mileage, 3964 miles were in the Cape province, 2492 in the Transvaal, 1265 in the Orange Free State, 1203 in Natal. Capital expenditure to end of 1915, £71,949,398, plus £15,040,642 in respect of rolling stock—a total of £86,990,040 (besides £1,081,666 for new construction during the year). Gross earnings for the year, £12,197,980; net profit after payment of interest, £1,310,380. Working expenditure, including renewals, £7,499,306, or 61.5 per cent of the gross revenue. At the end of 1915, 641½ miles of new line were under construction. At the end of 1916 the mileage in operation was reported to have increased to 9419.

Finance. The banking returns indicate the soundness of the country's commercial position. Credit after two and a half years of war is still apparently very good, and no serious setback is now anticipated. The profits earned by the banks in 1916 were well maintained, and the following dividends were declared: African Banking Corporation, 6½ per cent; National Bank of South Africa, 6 per cent; Netherlands Bank of South Africa, 4 per cent; Standard Bank of South Africa, 14 per cent; Stellenbosch District Bank, 12 per cent. In the table below are shown budget estimates:

	1914-15	*1915-16*	*1916-17*
Revenue	£15,323,185	£17,690,536	£18,800,000
Expenditure	17,328,296	17,487,456	17,900,000

The total public debt stood, March 31, 1916, at £150,832,734.

Government. The four original provinces form a legislative union under one head—a governor-general appointed by the crown, who, with an executive council (whose members are chosen by him), administers the country as the governor-general in council. The Senate consists of 40 members (8 nominated by the governor-general in council; 32 elected, 8 for each province). The House of Assembly consists of 130 elected members—51 from the Cape of Good Hope, 17 from Natal, 45 from the Transvaal, and 17 from the Orange Free State. Pretoria (Transvaal) is the capital and administrative seat of the executive government; Cape Town is the seat of the legislature. The governor-general in 1917 was Viscount Buxton of Newtimber. Gen. Louis Botha, premier since May 31, 1910, resigned December 14, 1912, on account of dissensions between the Dutch and the British on naval and other matters; but he again took office in the same year as premier and minister of agriculture, and in October, 1913, as premier and minister for native affairs. The Union government has taken over the administration of Southwest Africa (formerly German Southwest Africa, a German colony). The railways of that country have been connected with the Union lines, and the entire system is regulated by the general manager of the South African Railways. British steamers call occasionally at the ports, but most of the goods intended for that country are being carried by the railways.

History. At the beginning of the year the military situation was such as to permit Gen. Smuts to leave his command and accept the invitation to represent the government of the Union of South Africa at the Imperial War Conference. When Gen. Smuts had assumed command in February, 1916, a portion of the British territory and all of German East Africa were in the hands of the enemy. By January, 1917, only part of German East Africa (q.v.) remained in German hands. According to newspaper accounts the political situation in South Africa at the beginning of the year continued to be peaceable. It was expected that the truce between Gen. Botha and the Unionists would be maintained. The Nationalists, who opposed the ministry, advanced the argument that the independence of South Africa was endangered by this close union with the empire. Their attacks upon this policy were most violent, but in two critical by-elections they were defeated by Gen. Botha. It was further reported that they were divided among themselves and that they were further weakened by the protest of neutral powers against German war methods. They had much to say about the interference of the Imperial Government with the rights of South Africa. On June 14 Lord Buxton, the governor-general, declared that there was no such danger of interference and that if such anxiety was real there was no foundation for it. Certain

Nationalists criticized this speech as itself an nterference with party politics and declared hat the people would not submit to any interference from oversea either by the government r by its representative. On June 15 Gen. Botha warned the members of the South African party not to be misled by a false movement for independence, declaring that to make any such attempt as this at the present moment was unjust and dishonorable. The South African party congress held its opening session at the end of September. The prime minister, Gen. Botha, in the course of a speech in which he emphasized the fact that the Allies did not want the war, said that the only thing to do was to fight it through to a victory. He condemned the Nationalists for their apparent wish to break down the party constitution which they had helped to draft. The congress passed a resolution expressing its readiness to come to some better understanding with the National party on the basis of first, the maintenance of the Union Constitution; second, the fulfillment of the obligations connected therewith; and third, the maintenance of the South African party principles. The attitude of the Nationalists was illustrated by the speeches of prominent members at the congress of Free State Nationalists at Bloemfontein at the end of September. The government's policy in aiding Great Britain in the war had, according to them, brought about a spirit of discontent that was almost revolutionary. Ultimate independence of Great Britain was desirable and inevitable. Nevertheless, there was no disposition to push the matter at present The time did not seem ripe for carrying on republican propaganda and as to another rebellion, that was not possible, and was brought up by the enemies of the Nationalists in order to discredit them. They declared that their party had increased in numbers to such an extent that should an election be held at once its representation in the House of Assembly would be doubled.

SOUTH AMERICA. See the articles on the various South American countries.

SOUTH AUSTRALIA. A State of the Commonwealth of Australia. It occupies the central and southern part of the continent, lying south of the Northern Territory and between Western Australia on the west and Queensland, New South Wales, and Victoria on the east. The State has an estimated area of 380,070 square miles, which is about 12.8 per cent of the area of the Commonwealth or nearly equivalent to the combined area of California, Nevada, and Arizona. Estimated population June 30, 1916, 433,563, as compared with 438,195 in 1915 and 408,558 at the 1911 census (these figures being exclusive of full-blooded aboriginals). The capital is Adelaide; its population, including suburbs, was 189,646 in 1911; as estimated in 1915, 205,000.

The legislative power is vested in a parliament of two chambers, the Legislative Council and the House of Assembly. The council consists of 20 members, elected for 6 years; the Assembly of 46 members, elected for 3 years. South Australia was the first of the States to adopt woman suffrage; the franchise was exercised by women for the first time in Australia at the Assembly election, April 25, 1896. The executive authority rests with a governor, who is appointed by the crown and acts through a responsible ministry. The governor in 1917 was Lieut. Col. Sir Henry Lionel Galway, K.C.M.G., D.S.O., who assumed office in 1914. Premier, A. H. Peake (coalition ministry formed August 28, 1917). See AUSTRALIA.

SOUTH CAROLINA. POPULATION. The population of the State in 1910 was 1,575,400, and on July 1, 1917, it was estimated to be 1,643,205.

AGRICULTURE. The acreage, production, and value of the principal crops, as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	2,313,000	43,947,000	$84,373,000
	1916	2,065,000	82,008,000	36,169,000
Wheat ...	1917	175,000	1,838,000	5,330,000
	1916	210,000	2,226,000	4,207,000
Oats	1917	400,000	9,000,000	6,000,000
	1916	500,000	9,975,000	7,200,000
Rice	1917	8,000	75,000	146,000
	1916	3,500	49,000	44,000
Potatoes .	1917	15,000	1,440,000	3,024,000
	1916	10,000	750,000	1,312,000
Hay	1917	250,000	*a* 280,000	5,768,000
	1916	255,000	332,000	5,544,000
Tobacco ..	1917	72,000	*b* 51,120,000	11,809,000
	1916	39,000	20,280,000	2,839,000
Cotton ...	1917	2,876,000	*c* 1,235,000	175,370,000
	1916	2,780,000	932,000	91,319,000

a Tons. *b* Pounds. *c* Bales of 500 pounds gross weight.

TRANSPORTATION. The total steam railroad mileage for the year ending December 31, 1917, was 3744.29 miles, of which 102.45 miles is double track. The railroads having the longest mileage were as follows: Southern Ry. Co., 1128 miles; Atlantic Coast Line, 919 miles; Seaboard Air Line, 767 miles.

During the year the Seaboard Air Line Co. completed and had in operation a new extension between Charleston, S. C., and Savannah, Ga., of 95 miles, 90 miles of same being in South Carolina. There was constructed 30.12 miles of double track.

FINANCE. The report of the State treasurer for the fiscal year of 1917 shows a balance on hand at the beginning of the year of $656,683. The receipts during the fiscal year were $4,687,958, and the expenditures $4,381,552, leaving a balance on hand on December 31, 1917, of $963,089. The State's bonded debt of $5,382,059 is valid.

EDUCATION. The total enrollment in the public schools of the State in 1915, the latest for which statistics are available, was as follows: White, 180,316 negro, 192,525, or a total of 372,841. The average daily attendance in schools for the white children was 123.118, and for the negro children 127,567, or a total of 250,685. The total number of white teachers was 5072, and of negro teachers 2998, or a total of 8070. The total school revenue for the year was $4,039,382, and the total expenditure $3,925,506. The average yearly salary paid to male teachers was $594.72, to women teachers $340,54; to negro male teachers, $127.77, and to negro women, $106.83.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include the State Hospital for the Insane, Confederate Infirmary of South Carolina, South Carolina School for the Deaf and Dumb, the State Penitentiary at Columbia, the State Reformatory for Negro Boys at Columbia, and the State Farm at Boykin.

There is also a State Tuberculosis Hospital and an Industrial School at Florence, but the former is not a charitable institution.

State Officers. Governor, Richard I. Manning; Lieutenant-Governor, Andrew J. Bethea; Secretary of State, W. Banks Dove; Attorney-General, Thos. H. Peeples; Treasurer, S. T. Carter; Comptroller, C. W. Sawyer; Superintendent of Education, John E. Swearingen; Adjutant-General, W. W. Moore; Commissioner of Agriculture, Dr. A. C. Summers; Commissioner of Insurance, F. H. McMaster—all Democrats.

Judiciary. Supreme Court: Chief Justice, Eugene B. Gary; Justices, D. E. Hydrick, R. C. Watts, Thos. B. Fraser, and Geo. W. Gage; Clerk, U. R. Brooks.

SOUTH CAROLINA, University of. A non-sectarian co-educational institution located at Columbia, S. C. It was founded in 1805 and since 1878 has been divided in two branches, the South Carolina College, at Columbia, and the Claflin College for Negroes at Orangeburg. In the fall of 1917 there were 352 students and 42 members of the faculty. Dr. L. P. Chamberlayne, of the ancient language department, died in 1917. Volumes in the library numbered 60,000. President, W. S. Currell.

SOUTH DAKOTA. Population. The population of the State in 1910 was 583,888, and on July 1, 1917, it was estimated to be 716,972.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17, were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	3,350,000	97,150,000	$116,580,000
	1916	2,950,000	84,075,000	64,738,000
Wheat ..	1917	3,716,000	52,024,000	101,967,000
	1916	3,650,000	24,825,000	37,237,000
Oats	1917	1,935,000	65,450,000	39,924,000
	1916	1,850,000	56,425,000	25,956,000
Potatoes .	1917	80,000	7,200,000	7,992,000
	1916	65,000	4,290,000	5,877,000
Hay	1917	735,000	*a* 1,102,000	11,681,000
	1916	750,000	1,425,000	7,695,000

a Tons.

Mineral Production. The total value of the production of gold, silver, and lead in 1916 was $7,604,692, an increase of $96,910 over the yield of 1915. The total output of gold was 360,909 fine ounces, valued at $7,460,644.

The gold production of the State in 1917 was $7,412,000, compared with $7,460,644 in 1916. The silver produced was 193,000 ounces, compared with 215,205 ounces in 1916. There was a small quantity of lead produced from smelting ores shipped. It amounted to 88,000 pounds.

Transportation. The total length of lines operated in the State on December 31, 1916, was 4285. The lines having the longest mileage were: The Chicago, Milwaukee, and St. Louis, 1799, and the Chicago Northwestern, 1065.

Finance. The treasurer's report for the fiscal year ending June 30, 1917, showed cash on hand, July 1, 1916, to the amount of $1,042,763. The receipts for the year amounted to $5,039,158, and the disbursements to $4,108,427, leaving cash on hand on June 30, 1917, to the amount of $1,973,504.

Education. The total school population in 1917 was 178,946.

Charities and Corrections. The charitable and correctional institutions include the School for the Deaf and Dumb, School for the Blind, Northern Hospital for the Insane, the Custa Sanatorium, and the State School for Deaf Mutes, at Sioux Falls.

Legislation. Among the more important measures passed by the legislative session of 1917 are those noted below: Provision was made for the budget system for the preparation and enactment of annual improvements. The office of State sheriff was created. The city manager plan of government was approved. Provision was made for the voting of citizens absent from the State in the national service. There was initiated an unusual primary law. By its provisions party campaign pamphlets are to be printed by the State. Candidates for president and governor within the party, must appear in one to sixteen joint debates, respectfully, within the State, or cease to be candidates. An independent candidate may file a "paramount issue" of eight words or less with the secretary of State. This issue will appear on the ballot, and the independent candidate must challenge the representative candidate to joint debate on it. An elected candidate who fails to observe the principles on which he was elected, or is guilty of misconduct, may be recalled by a party jury. A prohibition law, effective February 21, 1918, was passed. Laws relating to wages and hours of labor were amended. A workingman's compensation law was passed. A constitutional amendment was proposed authorizing the creation of the hail insurance fund. Land owners are permitted to form drainage districts of geographical lines. Provision was also made for the formation and regulation of irrigation districts. Laws relating to taxation were amended in important details. Several laws relating to eugenics were passed. The banking laws of the State were amended. A special commission was appointed to make a survey of the educational system and to study the school laws and make recommendations for changes therein. The Supreme Court, on January 22, held the so-called "Blue Sky" law constitutional.

State Officers. Governor, Peter Norbeck; Lieutenant-Governor, W. H. McMaster; Secretary of State, Frank M. Rood; Treasurer, G. H. Helgerson; Superintendent of Public Instruction, Chas. H. Lugg; Attorney-General, C. C. Caldwell; Adjutant-General, W. A. Morris; Auditor, J. F. Handlin; Commissioner of Schools and Public Lands, N. E. Knight; Commissioner of Insurance, W. N. Van Camp—all Republicans.

Judiciary. Supreme Court: Presiding Judge, John Howard Gates; Justices, Charles S. Whiting, E. G. Smith, James H. McCoy, Samuel C. Polley; Clerk, E. F. Swartz.

SOUTH DAKOTA, University of. A co-educational State institution located at Vermilion, S. D. In the fall of 1917 there were 660 students and 70 members of the faculty. Volumes in the library numbered 35,000. Income from productive funds in 1917 amounted to $170,000. There is in course of construction a new women's building to cost $125,000 and new engineering shops to cost $25,000. The university was founded in 1883. President, Robert L. Slagle.

SOUTH DAKOTA STATE COLLEGE OF AGRICULTURE AND MECHANICAL ARTS. A co-educational State institution located at

Brookings, S. D. In the fall of 1917 there were 20 students and 75 members of the faculty. Volumes in the library numbered 20,000. Productive funds in 1917 amounted to $390,941 and the income therefrom to $40,979. The college was founded in 1881. President, E. C. Perisho.

SPAIN. A constitutional monarchy in southwestern Europe, occupying the greater part of the Iberian Peninsula. It is separated from France by the Pyrenees. The capital is Madrid.

AREA AND POPULATION. The country, anciently made up of fourteen kingdoms, is now separated into provinces. The area of these provinces totals 504,547 square kilometres (194,794 square miles), and their population, as calculated December 31, 1914, 20,500,287 (18,607,674 in 1900).

There were, in 1915, 127,870 marriages, 614,704 births, 452,450 deaths, 50,359 emigrants. Some of the principal cities, with their communal population, are: Madrid, 599,807; Barcelona, 587,411; Valencia, 233,348; Seville, 158,287; Málaga, 136,365; Murcia, 125,057; Saragossa, 113,729; Cartagena, 102,542; Bilbao, 93,536; Granada, 80,511; Lorca, 70,807; Valladolid, 71,066; Palma (Baleares), 67,544; Cádiz, 67,174; Córdoba, 66,831; Santa Cruz de Tenerife, 63,004; Santander, 65,046; Las Palmas (Canarias), 62,886; Jerez de la Frontera, 62,628; Alicante, 55,300; Gijón, 55,248; Oviedo, 53,269; San Sebastián, 49,008.

PRODUCTION AND SUPPLIES. Frequent reports came during 1917 from Spain of widespread unrest because of her attitude toward the war; and an almost universal food shortage culminated in a general strike. The government, March 29, announced the suspension of constitutional guarantees and closed the "People's House" and other labor centres. The next day a censorship was established "to prevent the dissemination of alarmist news."

A law has recently been passed for state support of agricultural and allied industries. In a report on the project, the British *Board of Trade Journal* says: "Farming on a large scale is not general in Spain; and, as the land is largely cultivated by peasants, the market for labor-saving machinery is not an important one. The total value of imports of agricultural machinery and implements into Spain during the last pre-war year, amounted to about £225,000, of which the United Kingdom's share was £48,000.

"It is improbable that any important improvements in agriculture in Spain will be introduced in the near future. Such assistance to the industry as may at first be given will very likely take the form of coördination of the means of transport, so as to enable produce to be marketed more economically. A step forward, however, was taken in July, 1917, when a law was passed for the formation of a Central Agricultural Loan Bank, in which the state proposed to stimulate coöperation, to carry on educational work (making use, when feasible, of existing organizations), to provide capital, and to urge banks to grant financial assistance. This bank is now to be established, and will have for its object the propagation of the principles of coöperation, and the granting of assistance, financial and otherwise, to coöperative societies. The bank will have an initial capital of 10,000,000 pesetas (£400,000 at par exchange)."

The question of the wheat supply grew in importance with the continuance of the war. The government adopted measures to prevent storage of grain by which the holders would be enabled to exact excessive prices. It encouraged the importation of foreign wheat by advancing to millers in the ports funds for paying cash, and reduced the freight rates so as to bring the cost price of wheat on the wharf to $2.95 per 100 pounds for wheat from the United States and Argentina and $3.10 per 100 pounds for Manitoba wheat.

The wheat supply during 1916 was affected by the difficulty of securing ships for importing it and by the rise in price at the foreign ports of origin. In January, 1916, the import duty was removed and exports were taxed. The government, by a law enacted in February, 1915, and amplified in November, 1916, was empowered to acquire and sell articles of primary necessity, controlling the distribution and selling price of such provisions.

The annual consumption of wheat in Spain is estimated at 4,200,000 metric tons, of which 3,600,000 tons are devoted to bread making, and 600,000 to seeding and the manufacture of macaroni and other alimentary pastes. In 1913 and 1914 most of the wheat imported came from Russia and Rumania; in 1915 and 1916 the United States supplied more than two-thirds, sending 248,115 and 235,708 metric tons, respectively. The total imports of wheat into Spain were 174,311 metric tons in 1913, 422,613 in 1914, 371,425 in 1915, and 313,408 in 1916.

In the table below are given areas under main crops and yield for two years:

	Hectares		*Quintals*	
	1917	*1916*	*1917*	*1916*
Wheat ...	4,187,354	4,106,952	38,898,198	41,457,516
Rye	728,544	746,937	6,189,177	7,310,998
Barley ...	1,653,715	1,572,627	16,709,782	18,912,418
Oats	576,628	565,728	4,796,898	4,666,551
Corn	446,000	467,178	7,000,000	7,275,468
Rice	41,608	40,628	2,320,980	2,417,076
Flax * ...	1,350	1,088	8,929	......
Beets † ..	59,845	......	18,324,710	......
Vines ‡ ..	1,896,377	1,284,238	23,400,000	23,896,067
Potatoes .	307,457	......	31,914,060	......

* Yield in seed. † For sugar. ‡ Yield in hectolitres of must.

The year 1916 was a prosperous year for grape growing. The district of Catalonia led with 1,112,650 tons, followed by Mancha and Estremadura with 589,236 tons, Levante with 551,380 tons, and New Castile with 486,397 tons.

Exporters in 1916 disposed of 117,450,192 gallons of wine of all kinds, compared with 43,244,699 gallons in 1915. Shipments of ordinary red wine increased nearly threefold in 1916 over 1915, more than 80 per cent going to France, while the amounts sent to England and America were less than in the previous year. Exports of rich sherry and amontillado were more than double those of 1915, 28 per cent going to France. Twenty-five per cent more of other dessert wines was exported than the year before, the increase being due almost entirely to French imports, which in 1916 were about five times as great as in 1915. Shipments of these wines to England and America showed a marked decline. Malaga wine exports increased by nearly 50 per cent, those to France being double the amount in 1915.

The olive flourishes in all the Mediterranean provinces and is cultivated more or less extensively throughout the peninsula as well as in the Balearic Islands. Large quantities are raised in the valley of the Guadalquiver and more than half the entire crop is from Andalusia. The cultivated area of olive trees in 1916 was 1,487,165 hectares, as compared with 1,481,962 hectares in 1915 and 1,431,027 hectares, the five years' average 1909 to 1913; or respectively 100.4 per cent and 102 per cent of the areas of those periods. The yield of olive oil was 2,071,150 quintals, as compared with 3,261,079 quintals in 1915 and 2,196,974, the five years' average 1909 to 1913; or respectively 63.5 per cent and 80.6 per cent of the yields of those periods. Shipments of olives and especially of olive oil increased in 1916, compared with the two previous years. In 1914, 44,811 metric tons of oil were exported; in 1915, 67,183; and in 1916, 88,852; an increase over 1915 of more than 21,000 metric tons.

A table of live stock on farms follows:

	1916	*1915*	*Difference*
Horses	488.715	512,453	23,738
Mules	912,984	950.836	87.852
Asses	838.648	826,204	12.444
Cattle	3.070,903	2,926,170	144.733
Sheep	16,012,277	15,994,608	17,669
Goats	3.207,360	3.216,682	9.822
Pigs	2,814,465	2,883.081	68,616
Camels	4,793	4,778	15

Spain's wool production may be estimated at 50,000 tons; the stock left from 1915 and the 1916 clip together aggregated about 80,000 tons. The exports of wool and woolen manufactures in 1916 amounted to 15,235 tons, compared with 19,457 tons in 1915.

The blast furnaces and smelting works were unusually busy, despite the coal situation. The production of coke increased from 597,315 tons in 1914 to 623,353 tons in 1915, the highest record in the past decade; briquettes decreased from 558,329 tons in 1914 to 555,357 in 1915; and cement advanced from 473.764 tons in 1914 to 476.255 in 1915. The output of semi-manufactured iron and steel increased from 382,044 tons in 1914 to 387,314 tons in 1915. The Spanish blast furnaces and rolling mills, employing 12,838 laborers, produced 772,093 tons of pig iron, iron and steel sheets, puddled iron, forged iron, and tempered steel, as compared with 464,000 tons in 1914.

COMMERCE. The total value of Spanish commerce during 1916 amounted to $479.672,322—imports $230.664,231, and exports $249,008,091. The aggregate value of imports shows an increase of $12.986.900 in 1916, compared with 1915, but aside from the receipts of gold and silver bullion and coin, the imports of merchandise actually decreased from $174,657,688 in 1915 to $164.424,496 in 1916, a loss of $10,233,192. Live animals and manufactured articles brought in were greater in value than during 1915, but raw materials and alimentary products declined. During 1916 Spain had a favorable balance of trade of more than $18,000,000, as compared with $9,000,000 in 1915. The United Kingdom continued in 1915 to be the chief source of Spanish imports; in 1913 France was second, followed by Germany, the United States, and Argentina; in 1914 the United States was second, followed by France, Germany, and Russia; and in 1915 the United States was again second, followed by France, Argentina, and Portugal. As purchasers of Spanish products France and Great Britain led. In 1913 Germany was third, followed by the United States and Argentina; in 1914 the United States was third, followed by Cuba and Italy; and in 1915 Italy was third, followed by Argentina and the United States.

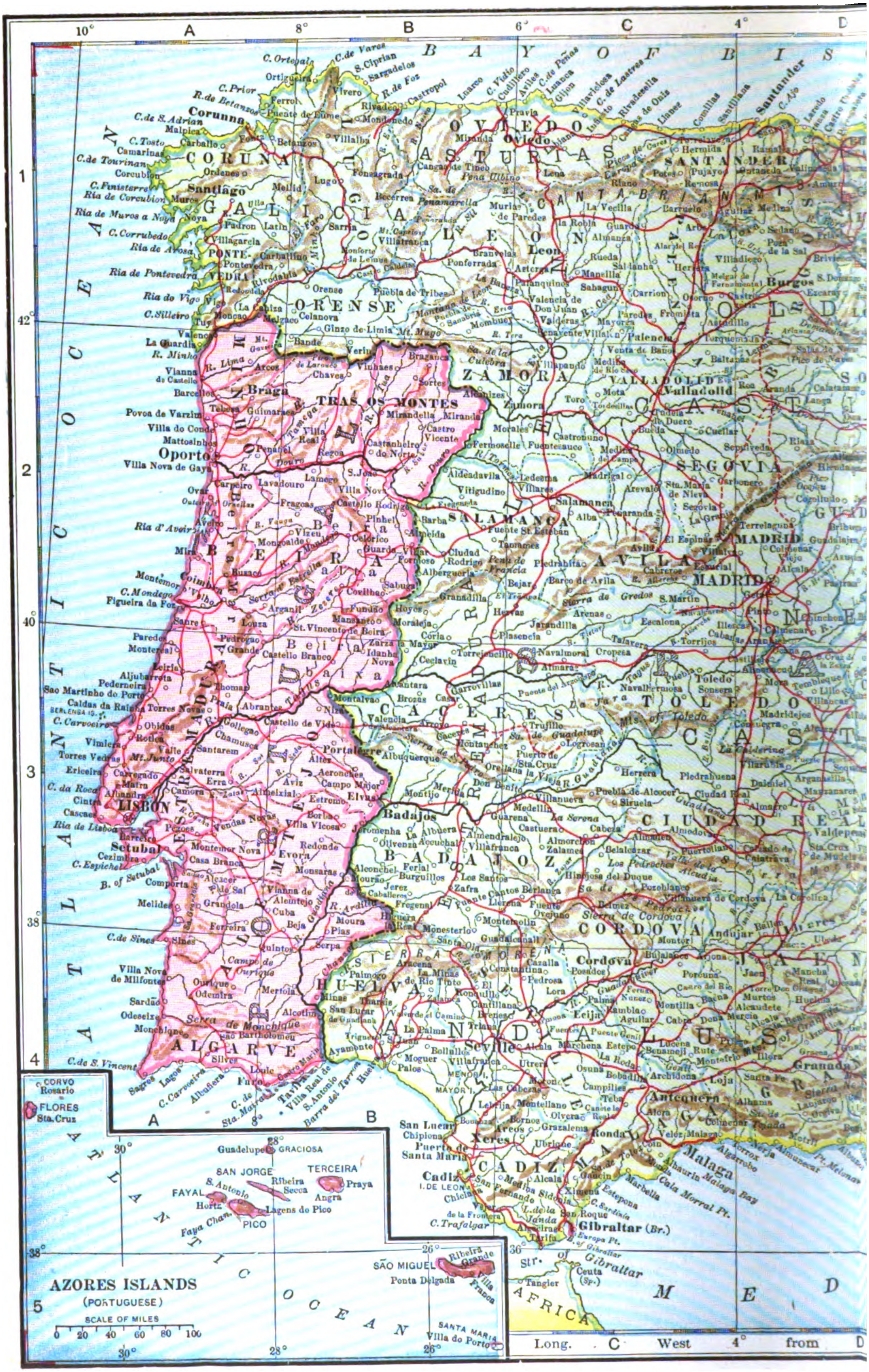
The Spanish Customs Bureau has issued the following detailed table of Spanish exports for three years, values in pesetas:

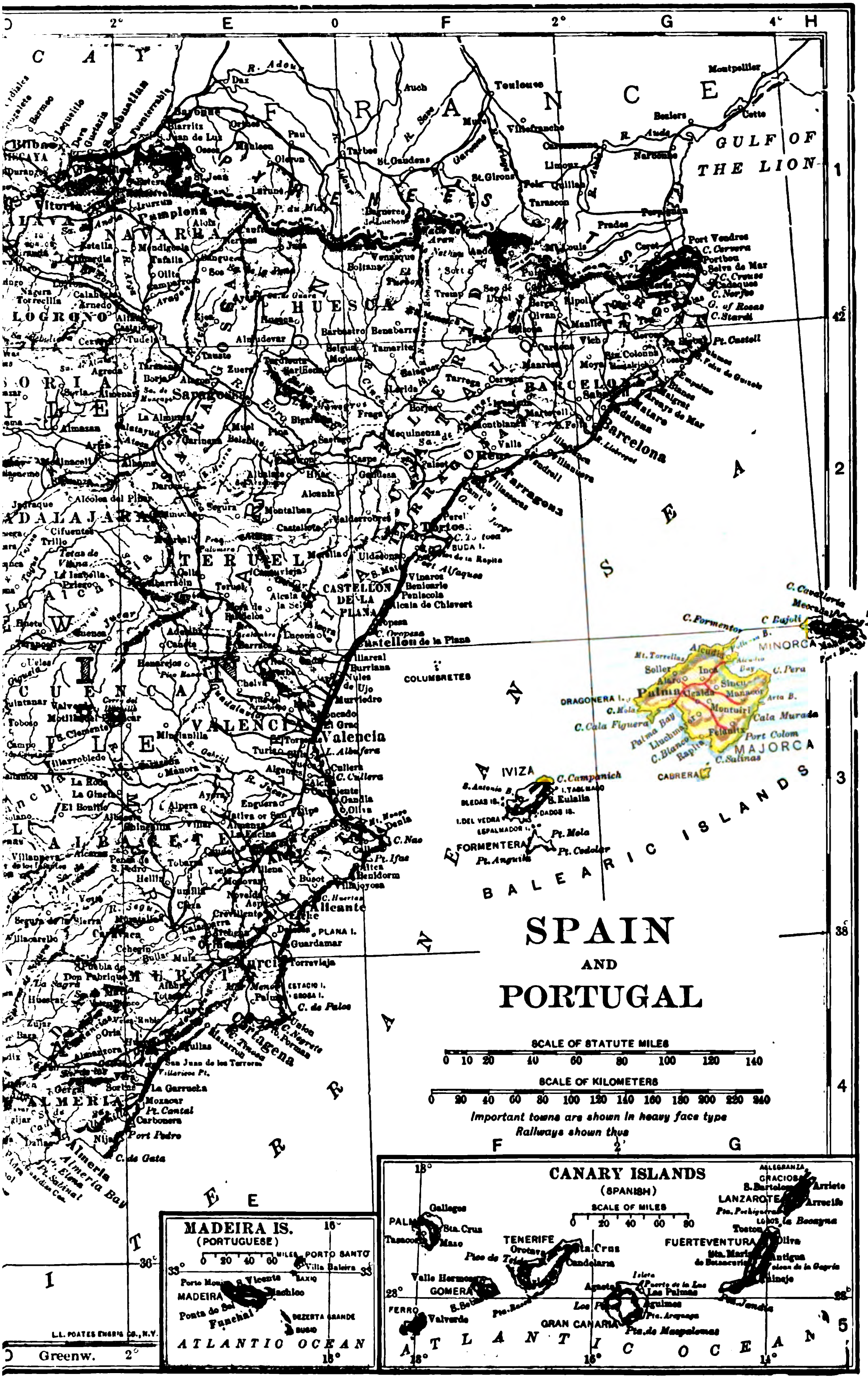
Exports	*1914*	*1915*	*1916*
Blende	2,767,000	578,000,000	2.986,000
Iron ore	67,046,000	49,601,000	56.629,000
Pyrite	33,199,000	29,421,000	35,665,000
Copper ore	1,818,000	605,000	859,000
Fire arms	4,218,000	3,961,000	25.099,000
Cotton goods	26,830,000	69,287,000	77,592,000
Shoes	8,226,000	83,544,000	13,962,000
Rice	6,971,000	21,863,000	2,534,000
Onions	14,820,000	14,784,000	14,800,000
Canned vegetables.	9,250,000	14,492,000	14,653,000
Canned sardines .	17,171,000	15,623,000	21,091,000

SHIPPING. The Spanish merchant marine included, in 1916, 843 vessels of over 50 tons register each, compared with 857 in 1915. Of these 240 were sailing vessels with a total tonnage of 31,101, an increase of 23 ships and nearly 2000 tons over 1915; 603 were steamers with a total tonnage of 816,747, a decrease of 37 ships and nearly 59,000 tons from 1915, the first decline in five years. The total tonnage of the vessels in the Spanish merchant marine of over 50 tons register was 847,848 in 1916, compared with 904,727 in 1915, a decrease of nearly 57,000, which represents the tonnage of the ships sold or sunk less the tonnage of new vessels constructed. The complete denationalization of the Spanish merchant marine threatening the country in 1915 through sales by Spanish shipowners to foreign nations was checked early in 1916 by a royal decree, which prohibited the sale to foreigners of any steam or sailing Spanish merchant vessel of over 500 tons constructed within the last 15 years if of iron or steel, or within the last 10 years if of wood. Shipping suffered from the scarcity and high price of fuel, strikes, and other causes attributed to the war.

The shipbuilding yards on both sides of the peninsula were actively engaged during 1916 in the construction of new vessels and enlarging facilities. In 1917 the merchant ships on the ways, mostly of over 50 tons register, represented an estimated total displacement of 100,000 tons. The most important acquisition to the Spanish merchant marine was the steamer *Oceanic*. bought by the Compañia Transatlántica, rechristened the *Alfonso XIII*, and placed in the Spanish-American service. The government assumed authority to adopt whatever shipping measures it deemed advisable in order to supply the country with provisions; it might even seize vessels to restore them to the domestic service and to regulate rates, indemnifying the owners. Vessels entering Spanish ports in 1916. 13,013, of 10,937,699 tons; cleared, 16,165, of 14,067,730 tons.

COMMUNICATIONS. Spain began to build railroads in 1840, and at the beginning of 1916 there were 8700 miles of track. Up to 1915 the state had contributed $139,000,000 for railway construction. In 1916 85.62 miles of track were built. An interesting development in Spain was a grant of a concession by the Spanish Ministerio de Fomento on January 12, 1917, to Don


BAY OF BISCAY
ATLANTIC OCEAN
CORUNA
GALICIA
ASTURIAS
OVIEDO
LUGO
ORENSE
PONTEVEDRA
LEON
SANTANDER
PALENCIA
BURGOS
ZAMORA
VALLADOLID
SALAMANCA
SEGOVIA
AVILA
MADRID
TOLEDO
CACERES
BADAJOZ
CIUDAD REAL
CORDOVA
HUELVA
SEVILLE
CADIZ
MALAGA
JAEN
GRANADA
ANDALUSIA
CASTILE
ESTREMADURA
SIERRA MORENA
MINHO
TRAS OS MONTES
BEIRA
ESTREMADURA
ALEMTEJO
ALGARVE
PORTUGAL
Corunna
Santiago
Oviedo
Leon
Oporto
Braga
Coimbra
Lisbon
Setubal
Evora
Badajos
Salamanca
Valladolid
Madrid
Toledo
Cordova
Seville
Cadiz
Malaga
Gibraltar (Br.)
Granada
Tangier
Ceuta (Sp.)
AFRICA
Str. of Gibraltar
C. Finisterre
C. Ortegal
C. da Roca
C. Espichel
C.de S. Vincent
C. Trafalgar
R. Minho
R. Douro
R. Tagus
R. Guadiana
MEDITERRANEAN SEA
AZORES ISLANDS
(PORTUGUESE)
SCALE OF MILES
0 20 40 60 80 100
CORVO
FLORES
GRACIOSA
TERCEIRA
SAN JORGE
FAYAL
PICO
SÃO MIGUEL
SANTA MARIA
Angra
Horta
Ponta Delgada
ATLANTIC OCEAN
10° A 8° B 6° C 4° D
1 2 3 4 5
42° 40° 38°
Long. C West 4° from D


SPAIN
AND
PORTUGAL
SCALE OF STATUTE MILES
0 10 20 40 60 80 100 120 140
SCALE OF KILOMETERS
0 20 40 60 80 100 120 140 160 180 200 220 240
Important towns are shown in heavy face type
Railways shown thus
FRANCE
GULF OF THE LION
BALEARIC ISLANDS
MINORCA
MAJORCA
IVIZA
FORMENTERA
CABRERA
DRAGONERA I.
COLUMBRETES
MEDITERRANEAN SEA
Barcelona
Valencia
Alicante
Cartagena
Tarragona
Toulouse
Montpellier
Perpignan
Palma
HUESCA
TERUEL
CASTELLON DE LA PLANA
ALBACETE
MURCIA
ALMERIA
CUENCA
SORIA
LOGROÑO
NAVARRA
MADEIRA IS.
(PORTUGUESE)
ATLANTIC OCEAN
Funchal
PORTO SANTO
CANARY ISLANDS
(SPANISH)
SCALE OF MILES
0 20 40 60 80
TENERIFE
GOMERA
FERRO
PALMA
GRAN CANARIA
FUERTEVENTURA
LANZAROTE
L.L. POATES ENGR'G CO., N.Y.
Greenw.
E F G H
1 2 3 4 5

Miguel Otamendi for an underground electric railway system in Madrid. This concession was to run for 90 years and a period of 8 years was to be allowed in the construction, which involved four double-track lines and a total length of 8.7 miles. The four great railway companies during the year 1917 joined in the formation of an important company to manufacture locomotives for themselves.

The present postal service in Spain is said to produce a revenue more than twice as great as its disbursements. There are 11 district inspectors, 49 principal administrators, 931 fixed general post offices, and 981 "ambulantes," served by one or more employees. In 1916, postal savings banks were established in Spain and their opening was welcomed as a national benefit. Although started when prices were abnormally high and generally unsettled conditions prevailed, these savings banks made a better showing at the close of the year than had been anticipated. Up to November 6 more than $3,200,000 had been deposited. The largest number of transactions was in Madrid, followed by Seville, Cadiz, Malaga, and Murcia. This indicates that the postal savings banks were patronized more by the agricultural population than by the industrial workers; but in the large Spanish manufacturing centres working people's societies partially absorb local savings.

FINANCE. A feature during 1916 was the rise in value of the peseta, the standard unit of Spain, compared with the currency of other countries. The exchange value of the peseta rose from $0.18 in 1914 to about $0.20 in 1916. Since the beginning of the war Spain augmented its gold reserve by 114 per cent.

An extraordinary budget for the financial reconstruction of Spain over a period of ten years was submitted to the Cortes in the autumn of 1916. Laws were enacted providing for the administration of state-owned quicksilver mines, the manufacture and sale of explosives, and the production of matches.

A tentative budget for 1917 was voted as follows (amounts in thousands of pesetas):

Revenue		*Expenditure*	
Direct taxes on land, etc.	490,608	Civil list	9,050
Indirect taxes	421,300	Cortes	2,821
Tobacco monopoly, lottery, mint, etc.	313,370	Public debt	451,145
Revenue	22,187	Pensions	79,585
Sales	1,800	Pres. of Council	1,120
Public treasury	31,771	State	6,614
		Justice	19,774
		Worship	41,689
		War	169,294
		Marine	83,146
		Interior	93,108
		Instruction	74,845
		Public works, etc.	174,215
		Finance	18,627
		Tax collecting	150,671
		Colonies	1,900
		Morocco	117,037
Total	1,281,036	Total	1,494,641

Actual revenue and expenditure for three years are shown below, in thousands of pesetas:

	1914	*1915*	*1916*
Revenue	1,408,638	1,916,528	1,280,536
Expenditure	1,527,448	1,948,958	1,465,044

The national debt of Spain on January 1, 1917, amounted to 9,365,072,616 pesetas, composed as follows: 3 per cent and 4 per cent perpetual exterior debt—sealed bonds, 948,818,900 pesetas; 4 per cent perpetual internal debt, 6,638,899,619; 5 per cent redeemable debt, 1,526,195,000; 4 per cent redeemable debt (1908), 150,152,500; non-interest bearing debt due to officials, 1,006,597; "Pagarés" of the ministry for the colonies, 100,000,000. Announcement was made, March 11, 1917, by governmental decree, of the flotation of a new Spanish loan of 1,000,000,000 pesetas. The loan would be issued at 5 per cent and would be redeemable in fifty years. Subscriptions were opened on March 31. A Madrid dispatch of April 1 stated that the loan had been oversubscribed twenty-four times.

GOVERNMENT. The constitution vests the executive power in the king, acting through a responsible cabinet of ministers appointed by himself. The Cortes, conjointly with the king, exercises the legislative authority; the Cortes consists of a Senate (360 members, partly hereditary, partly appointive, and partly elective). Reigning sovereign, Alfonso XIII. Heir-apparent, Prince Alfonso, born May 10, 1907. The Cabinet, as constituted at the beginning of November, 1917, was as follows: Prime Minister and Minister for Foreign Affairs, Señor Garcia Prieto (Marqués de Alhucemas); Justice, Fernández Prada; Finance, Ventosa; Interior, Bahamonde; War, La Cierva; Marine, Gimeno; Public Works, Alcalá Zamora; Public Instruction, Rodés. See *History* below.

HISTORY

GERMAN PROPAGANDA. The pro-German element was reported to be increasingly active early in the year. The view announced by Señor Maura, in the latter part of the preceding year, that the policy of strict neutrality was unwise and that eventually Spain should draw near to England and France stimulated the pro-German element to action. Their newspapers charged that a conspiracy was on foot to drive Spain into the war on the side of the Allies and that the prime minister, Romanones, was in league with that conspiracy. They declared that if he persisted in this design the army would revolt and the country be involved in civil war. A league for neutrality was formed under the nominal head of the Marqués de Polavieja which published alarmist articles in the newspapers. The pro-German element, which had hitherto controlled, for the most part, only clerical and reactionary newspapers, now was said to control seven of the daily newspapers in Madrid alone. These papers bent their energies to the defense of the alleged cruelties and transgressions of the Germans as fast as they were reported. The German element was further angered by the government's cordial reply to President Wilson's note and by the foreign minister's memorandum after the torpedoing of a Spanish vessel, denying the right of belligerents to destroy vessels carrying contraband of war. The pro-German parties now concentrated their efforts upon driving Count Romanones from office. The break of the United States with Germany caused much surprise in Spain, where it had been assumed that American neutrality was as certain as the neutrality of Spain itself. The German note announcing the renewal of submarine warfare occasioned much alarm and was regarded as the most serious issue that had arisen since the war began. Nevertheless, there was no sign that strict neutrality would be departed from. The government's position was difficult. On the one hand the clerical, reactionary, and pro-German elements belittled the importance of the German submarine threat and justified it as a retort to the British blockade. The policy that they urged upon the government was to divert Spanish commerce from the Allied to neutral countries, thus avoiding all awkward consequences. On the other hand the Liberals and Radicals recommended vigorous action.

FALL OF THE ROMANONES MINISTRY. Early in January the attacks on the Ministry of Romanones as hostile to neutrality led to the resignation of the prime minister, but at the king's request he remained in power. On April 19, however, the political situation having become more acute, the Ministry resigned and a new Ministry was announced under Señor Garcia Prieto, as prime minister.

The condition of the country on the fall of the Romanones Ministry was described by Spanish writers in the following terms:—Spain had ten organized political parties with the absolute monarchists on one extreme and the anarchists on the other. The Conservative group, comprising the church, the nobility, and the army, was said to be openly in sympathy with Germany. German agents had been very active in Spain and had circulated the report that if the Germans were victorious they would restore the Pope's temporal power. Another element, though having no sympathy with Germany, were hostile to France, never having forgiven her for the invasion of Spain in the time of Napoleon. The Liberals, Republicans, and moderate Socialists, sometimes all classed as reformists, were said to be entirely on the side of the Allies and some of them carried on a campaign in favor of the Allies. The most extreme element in this group went so far as to urge Spain's entry into the war against Germany and they did this long before the submarine campaign was resumed. In Spain the propaganda on behalf of the Allies was carried on to offset the German propaganda. There was much activity on both sides. The German methods were secret. They were accused of making tempting promises to Spain such as the return of Gibraltar and the acquisition of Morocco. Popular discontent showed itself especially in the threat of the workmen to go on a general strike as a protest against the inactivity of the government. The government's repressive measures checked this strike, but the unrest continued. When the Cabinet resigned the prime minister published a letter on April 20, saying that submitting to the submarine campaign of the Germans would endanger the life of the nation. The attitude of South America had a great effect upon the Spanish nation. By some it was regarded as a proof that Spain had lost completely her influence over Spanish America, and that this loss would soon be followed by an economic loss. They argued that Spain ought to have gone into the war on the side of the Allies and on the side of Latin America.

THE PRIETO MINISTRY. On April 21, two days after its formation, the new Ministry issued a note that it would observe strict neutrality. It sought to avoid so far as possible any difficulty with either of the belligerents. The sinking of passenger vessels by the German submarines in Spanish waters had provoked protests from the Allies. These protests were received with courtesy and promises were made that the government would do its best to keep German submarines from finding their way into Spanish waters. Meanwhile notes were passing with great frequency between the Spanish and German governments on the subject of the submarine ravages. On April 20 a note was sent to the German government complaining that Spain's attempts to safeguard sea traffic against the methods of the German government had failed. It said the sinking of some vessels without warning such as the *San Fulgencio* had taken place; that the conditions imposed by the German government on the return of the vessels detained in English ports would have caused great loss; that the increased risks were rendering the economic existence of Spain still more difficult; it was evident that Germany did not intend to acknowledge Spanish rights or to take into account the consideration of a country which hitherto had been friendly; that if the Imperial government adhered to its present determination it must not be surprised if Spain in self-defense should use measures of protection. The replies of Germany to the Spanish complaints were in the main conciliating. On May 18 the Cabinet met to discuss the sinking of the steamer *Patricio*, and on the following day a note was addressed to Germany in regard to it. The German Ambassador immediately ordered the German consul to pay an indemnity to the chief engineer who had been killed on board the vessel, and on May 22 the prime minister announced that Germany had replied in a satisfactory manner to the Spanish complaint. On May 16, France, Great Britain, and Italy addressed diplomatic notes to the Spanish government complaining of the attacks by German submarines against Allied and neutral vessels in Spanish waters. While the government was trying to steer its way between the two contesting parties there were demonstrations throughout the country on behalf of a policy more favorable to the Entente Allies. In April a meeting to that purpose was held at Madrid. It passed a resolution asking the government to break off diplomatic relations with Germany and to face the consequences, but the speeches at the meeting indicated that there was no desire to take part in the war itself. They aimed simply at a sympathetic neutrality toward the Entente Allies. The Socialist group at Madrid, which met about the same time in order to define the party's attitude toward the war, was equally disinclined to a participation in the conflict. It simply declared the necessity of breaking off relations with Germany and of defeating German imperialism. It concluded with the following statement: "The Spanish Socialist party thinks it equally indispensable that the working classes of all countries shall strive for the restoration of the international purged of the elements which in the present conflict shall prove to be unworthy of the attitude of our party. This restoration of the international must be carried out as quickly and as solidly as possible in order to obtain the complete defeat of the capitalist system by means of the socialization of production." In Catalonia and other northern provinces there was much diversity of opinion as to the attitude that the country ought to assume. There was much discussion of the feeling in the army and several superior officers were removed because they were thought to be too warlike, and others because they were not thought to be warlike enough. After the Madrid meeting the government decided that no similar meetings either on behalf of the Allies or the Central Powers should be permitted. This provoked much discontent on the one hand, and on the other led the government to talk about a new suspension of constitutional guarantees in order to arrest the hostile movement which was developing everywhere. Toward the end of May it was apparent that the discontent in the army was increasing. Committees of officers and soldiers, especially in the infantry, were formed to present their claims and secure from the government reforms in the military administration. This demand took the form of an actual ultimatum. On June 9 the Prieto Ministry fell from power. By some this was attributed to a crisis resulting from the army's attitude; by others to the demand for a more vigorous policy toward German submarine aggression. A new Ministry was formed under Señor Dato.

REVOLUTIONARY MOVEMENT IN THE ARMY. Some of the grievances of the army seemed to be genuine. In the lower ranks the officers had suffered unfair treatment in the matter of pay and in the matter of promotion, and officers of all ranks complained, with apparent justice, of the government's neglect to provide the army with proper war material and equipment. In short, it seemed to be a passive military revolt. The new government under Señor Dato attempted to settle the main question by giving the infantry officers the right to form committees of defense. The revolutionary movement seemed for a time to be checked. There was sympathy with the officers at first, but alarm was felt at the precedent as endangering the constitution. There was some fear too that these committees of defense might not be confined to the simple purpose of improving the service, but might go further and secure for the army advantages which it ought not to have.

These defense committees notwithstanding the concessions made to them put forth further demands that became more and more radical. For example the infantry defense committees on August 9 passed resolutions demanding that certain generals should be considered enemies of the infantry and action should be taken against them. They named several generals that should be retired. The war minister, the Marquise de Estella, though sympathizing with the defense committees, refused to cancel the appointment as military governor of Valencia of one of the generals whose retirement they had demanded. As a result of this difficulty the war minister resigned. He declared that in mingling in politics the defense committees were committing the gravest error. The defense committees passed a resolution complaining that the principles of morality and justice and respect for law were entirely ignored, and that there was no hope for improvement because the two parties under the government showed no desire to improve. The political parties instead of profiting by the defense committees as a wholesome element making for reform treated them as enemies. This resolution then went on to say that in viw of these dangers the infantry defense committees regarded it as their duty to lay the matter before the king.

The army demanded reforms of a moral, economic, and military character. The most important one in the last named class was the suppression of favoritism in appointments. The army's programme did not involve any political reorganization, but it aroused the hopes of the radical elements everywhere. A large number of the officers concerned in the demand for reforms remained quiet after this first movement, thinking that further agitation might lead to a falling off in discipline, or, believing that their manifesto had accomplished or would accomplish their purpose. Some of them feared the social agitation that might result from further advance in this direction. On the other hand there were many who believed in direct interference in public affairs and according to the reports from Madrid in November it seemed that their opinion had some chance of success. After the general strike with its revolutionary tendencies had subsided, the army again assumed a critical attitude and with more assurance, because its first movement in the publication of the manifestoes had brought out the evidence that their desire for reform was shared by the rest of the country. As to the parliamentary programme, that is to say, the programme of the radical element in the Cortes, it comprised the following points: First, extensive decentralization and self-government for the different regions so far as it did not impair the political unity of the country; second, reform of the Senate, which should be recruited altogether by election, and the suppression of those senators who were chosen for life by the king or who held that office of right as grandees of Spain; third, modification of article seventeen of the Constitution in regard to the suspension of guarantees—such suspension henceforth not to exceed fifteen days and Parliament to be consulted on the question of a prorogation; fourth, the veto of an act of Parliament to be valid only during the session of the same legislature and any law to go into effect without the need of royal sanction if Parliament voted it a second time; finally, Parliament was to be in session each year as a matter of right from the first of October to the thirty-first of December. The radicals also demanded that a national body should be created to make sure of the fairness of the elections. In supporting this programme both the radicals in Parliament and the army for the most part gave the assurance that they had no wish to endanger the dynasty. As to the popular support of this course it seemed to be stronger than at any time previous because the people had become more conscious of their rights and were better prepared to support this middle class and military movement. While different means of carrying out the programme were advocated by the people, as well as by the army and the politicians, the end was in general the same.

ATTITUDE TOWARD GERMANY. By some, as noted above, the fall of the Prieto Ministry was taken as a sign that all parties were united in their patriotic indignation against the submarine policy of Germany. Dato hitherto had been a pronounced partisan of non-intervention and was regarded as the only man who, if he went to extremes against Germany would carry with him the noninterventionists. Popular opinion had been much excited by the sinking of the *Patricio*, and the Spanish press expressed slight confidence in the effectiveness of protests from the Prieto government. When the preceding Ministry had sent a vigorous protest to Germany it had straightway been obliged to resign. Nevertheless, even pro-German Spanish papers now began to demand reparation for these outrages. Germany responded favorably to these demands, expressed her regrets, promised everything, and even offered to salute the Spanish flag as by way of public apology. But two days later a German submarine sunk another Spanish steamship, the *Telesfora*. The contrast between the German professions and their actual conduct caused bitter comment in the press. After the sinking of the *Telesfora* the Prieto Ministry was obliged to take the same attitude toward Germany as the former Ministry. Its subsequent resignation was taken in France as proof that Germany had Spain completely in her grip, and that she had perfected her means of directing public opinion in the same way that she had done in the United States and in Greece. German agents in Spain were said to be very numerous. Many German subjects had come to Spain after the loss of the African colonies and after Portugal's entry into the war. They joined with the German agitators already there and formed a large army for the systematic carrying out of the German aims. They sought to terrorize the timid and to appeal to the self-interest of others by declaring that the victory of Germany was certain and that it meant a victory for authority against democracy and revolution. Nevertheless, as the submarine outrages continued many believed that Spain's patience would be exhausted and that like the United States she would be forced into the war. The Dato Ministry was now the third that had to deal with this same problem and the issue before it was clear: It had either to accept a condition of things that had become unbearable or it had to take vigorous action and break off relations with Germany. At this time a union of parties was predicted and a rallying to the side of the Allies. The king himself had long favored the policy of intervention. After the sinking of the *Telesfora* the Spanish press, even including those papers which had hitherto been neutral, united in denouncing Germany's unjustifiable course.

POPULAR DISCONTENT. On June 18, a meeting of the four parties of the Left was reported. These groups comprised the Republicans, the Socialist Union, the Radicals, and the Reformists, and their meeting was for the purpose of bringing about an understanding among them. Afterwards the leaders of the respective groups signed a declaration saying that the present government gave no promise that the grievances from which the country suffered would be removed and that it would not be possible to reestablish the conditions of morality and justice that all classes demanded unless recourse was had to the sovereign will of the people, and unless that will controlled as a dominating force all the national institutions. It was reported that a movement for the complete reconstruction of the political fabric was in progress and was fast gaining adherents. Such a movement had its origin years ago in the discontent among the advanced parties with the existing methods and at the present moment both the internal difficulties and the conditions brought about by the war had intensified this spirit of unrest. Even the former prime minister, Maura, head of the conservative party, admitted there were reasons for discontent. The new government announced that there was no intention of enforcing the censorship against criticism of the Ministry, but that the government would prohibit personal attacks on the part of irresponsible writers. He added that the country as a whole supported the neutral policy of the government. Meanwhile, according to the reports in the press, the Catalonian population was hostile to the government and was constantly clamoring for complete independence. In one of their newspapers it was openly declared that they would not submit to any law which was not voted by themselves and for themselves. The cost of living had increased during the last three months from 15 per cent to 25 per cent and the poor people could not stand the strain. Coal was so scarce that it was hardly possible to keep the trains running. On June 25 the Cabinet decided to suspend the constitutional guarantees. This was explained by the news from the provinces which indicated that the people were being incited to violence by the attacks in the press on the social system.

On August 13 it was announced that the government had decided to declare martial law throughout Spain. Disturbances were reported from various parts of the country, but they were said to have been virtually put down. A general strike, especially affecting Madrid, Saragossa, and Corunna was reported to have been called and a railway strike took place on the Northern Company's line. In Bilbao there was a conflict between workmen and the troops, but the casualties were slight. Later the strikers were said to have attacked the police. At Madrid there were disorders on the morning of August 14, but they were put down by the troops.

The government's unfavorable response to the demand of the Catalonian representatives that the Chambers should be called together as a constituent assembly was published on July 9. Three days later the Catalonian deputies protested against this response. On July 14 the president of the council declared that since the rights of meeting were suspended the government could not authorize the meeting of representatives at Valencia. Nevertheless, the latter did meet on July 18, but at the opening of the session the governor of the city appeared and ordered its dissolution. The members dispersed without causing any disorder. Agitation and strikes were reported at Valencia on June 21, but order was restored in a few days.

Discontent among the middle classes and the intellectuals dates back to the period following the war with the United States when Spain suffered the loss of her colonies. Angered at this blow to their pride and their interests certain classes whose principal champion was Costa started a movement for internal reform. A programme for changes of a political, economic, and administrative character was put forward with the support of the middle classes. These attempts failed and the situation went from bad to worse. On several occasions since the country was shaken by popular agitation which indicated a serious condition of discontent. The war aggravated this condition. While public opinion was greatly divided during the war on external questions, it was much less so in regard to the internal situation. The more thoughtful people in Spain believed that it was necessary to put into execution a plan of reform which would bring the security and calm that was necessary for the prosperity of the country. The officers of the army and the minority element in Parliament constituted themselves the mouthpiece of this point of view. One outcome of it was the publication by the military committees in the beginning of July, 1917, of the manifesto previously referred to. This manifesto, together with the decision of the government not to open Parliament, were the immediate causes of the popular unrest.

Fall of the Dato Cabinet. The grievances against the Cabinet were numerous and complex, but in general they had to do with the handling of the general strike, the maintenance of the censorship, and the failure to call Parliament. In short, the fall of the Cabinet was due to the same discontent throughout the country that had led to the defense committees' movement in June, the Barcelona assembly in July, and the general strike in August. Much alarm was felt, and in political circles there was even talk of the military government. Specifically the fall of the Cabinet was attributed to the efforts of the military defense committees working through the political parties in Parliament.

Second Prieto Ministry. The ministry of Dato failed to deal efficiently with the various difficulties and fell from power at the end of October. A Ministry of concentration was then attempted from among the conservatives, but did not succeed. Thereupon Señor Garcia Prieto, chief of the Democratic group, which was the largest parliamentary party, formed a Ministry (November 3) which promised better. It still partook of the character of a compromise Ministry. The prime minister had failed to unite as he hoped to do all the parliamentary groups. Thus the Ministry contained an ultra-Conservative colleague of Maura, but no representative of the group that Dato had directed, and while there was a Republican in it, namely, Señor Rodés, the reformist group, led by Alvarez, had no representative. Thus it seemed to be formed exclusively on an opportunist basis and critics doubted whether it could bring anything better than a temporary solution. In that case there was danger that the military problem would become more grave, for the government would more and more need the support of the army if the internal difficulties increased. Thus the army would become more and more the controlling factor in the situation. Hence the office of minister of war was especially important. This portfolio was bestowed upon Señor Juan de La Cierva, well known as the minister of the interior, who had taken stern measures in suppressing the Barcelona riots in July and August, 1909. He and the Maura Cabinet had fallen from power as a result of the criticism following that event and he had since then never occupied a position in the government. Señor Garcia Prieto had been one of his bitter opponents at that time, but it was expected that in the existing crisis these enmities and difficulties would be forgotten.

SPANISH LITERATURE. At the moment of going to press, official statistics for Spanish literature in 1917 had not yet appeared, but from the figures available, it seemed probable that the total output for 1917 would surpass by about one hundred volumes the production of 1916, although it would still fall some two hundred volumes short of the record for 1915. The official figures of the *Bibliografía Española* for December 1, 1917, were 1362. The great war continued to hamper the importation of books and this fact for a third time controls the scope of this résumé.

Cervantes Tercentenary. The tercentenary of Cervantes's death, which occurred in 1616, caused the production of numerous studies concerning the author and his works. Of those that have appeared since our last article was written, the following should be mentioned: J. Givanel Más, *Cataleg de la colecció cervantina firmat per D. Isidro Bonsoms y Sicart, y cedida per ell a la Biblioteca de Catalunya*, vol. i (Anys 1590-1800) and *La obra literaria de Cervantes* (his reception discourse for the Real Academia de Buenas Letras de Barcelona); L. Miner, *El Cura según Cervantes;* L. Pérez-Rubín, *La literatura del Quijote;* D. de la Asunción, *Cervantes y la orden trinitaria;* J. López Barrera, *Cervantes y su época;* Cervantes, *Don Quijote* (vols. v and vi, completing the critical edition by F. Rodríguez Marín); Cervantes, *La ilustre fregona* (F. Rodríguez Marín); P. Savj-López, *Cervantes* (Spanish translation by A. G. Solalinde); J. M. Chacón y Calvo, *Cervantes y el Romancero;* Cervantes, *Poesías* (*Compiladas y prologadas por* Ricardo Rojas); J. Fitzmaurice-Kelly, *Cervantes* (originally published in English, 1913; new and revised edition in Spanish by B. Sanín Cano); F. A. de Icaza, *Supercherías y errores cervantinos puestos en claro;* Cervantes, *Novelas ejemplares* (illustrated edition with prologue by Blanca de los Ríos, under the auspices of the Real Academia Hispano-Americana de Ciencias y Artes de Cadiz); and Cervantes, *Obras Completas: Comedias y Entremeses*, vol. ii (R. Sehevill and A. Bonilla y San Martin).

Centenaries. The year saw the celebration of the centenary of the birth of two great poets: José Zorrilla (author of so many beautiful Spanish legends and reviver of the Don Juan legend in Spain) ad Ramón de Campoamor (creator of the exquisite *Doloras*).

Necrology. Spanish letters and Spanish scholarship suffered severely in the death of Francisco Fernández y González (member of the Royal Spanish Academy, Rector of the University of Madrid and a brilliant, prolific writer on questions of ethics); and Joaquín Dicenta (brilliant journalist, poet, novelist, and dramatist, author of the ecclesiastically prohibited *Juan José*, in which he himself frequently played the title rôle). Although Pedro B. Palacios (known best by his pseudonym "Alma Fuerte") and José Enrique Rodó were not Spaniards, their deaths may be said in a very real sense to have impoverished Spanish letters. One of the glories of Argentina, Alma Fuerte was called "the poet who is all heart, the master enamored of children and flowers, who with his *Proféticas* and *Evangélicas* brought peace to afflicted souls and to the humble destitute in this vale of tears." And yet, even in his old age and despite such a past (or perhaps because of it), this world-war so stirred his soul with indignation that he wrote a poem that is considered the most scathing arraignment of the

Kaiser that has ever been written. The Uruguayan Rodó was as highly esteemed in Spain and Argentina as he was in his own land, where his brilliant novels and essays had earned him a position of unchallenged leadership.

LITERARY CRITICISM flourished, as witness the following titles, in addition to those cited in connection with Cervantes: H. Medinaveitia, *Bécquer;* R. Monner Sans, *Don José Selgas;* N. Alonso Cortés, *Zorrilla, su vida y sus obras* (vol. i); J. Cejador y Frauca, *Historia de la lengua y literatura castellana* (vols. v, vi, and vii, from Philip IV through 1849); F. de Rojas, *Zorrilla, "Cada cual lo que le toca" y "La viña de Nabot"* (Américo Castro); E. Juliá Martínez, *El americanismo en el idioma castellano;* C. Eguia Ruiz, *Literatura y literatos: estudios contemporáneos* (*Segunda Serie*); A. López, *Estudios crítico—históricos de Galicia;* E. Cotarelo y Mori, *Actores famosos del siglo XVII, Sebastián de Prado y su mujer Bernarda Ramírez;* N. Alonzo Cortés, *Viejo y nuevo; Relaciones históricas de América, Primera mitad del siglo XVI* (*Sociedad de Bibliófilos Españoles*)*; Dos romances anónimos del siglo XVI* (H. Thomas); and Julián de Armendariz, *Las Burlas veras* (S. L. M. Rosenberg). In *Clásicos Castellanos* the following volumes appeared: 32, Moreto, *Teatro* (N. Alonso Cortés); 33, Luis de León, *De los nombres de Cristo*, II (F. de Onís); 34 Quevedo, III: *Los sueños*, II (J. Cejador y Frauca); 35, Francisco de Rojas, *Teatro* (F. Ruiz Morcuende); 36, Cervantes, X: *Novelas ejemplares*, II (F. Rodríguez Marín). The *Biblioteca Calleja* is publishing a series of neat, attractive volumes, small in size and low in price (similar to the Everyman's Edition). M. Menéndez y Pelayo's *Obras* reached vol. vii, and Juan Valera's *Obras Completas* vol. xlv.

POETRY, instead of giving us a lot of new material, seemed to pause and collect into permanent form the product of the past twenty years. Of the *Obras Completas* of Juan Ramón Jiménez three volumes appeared, in addition to a volume of prose (*Platero y yo*) and a volume of *Poesías Escogidas.* Antonio Machado likewise published his *Poesías Completas* and *Páginas Escogidas;* and Francisco Villaespesa put forth *Andalucía*, *Judith*, *La Maja de Goya*, and *Paz*, all constituting his best works. To F. Pérez Menéndez Maturana we owe the *Ruta de Ensueño*, which some critics place above his other works. The most notable poetic event of the year was the publication by R. Menéndez Pidal of a recently discovered fragment of a thirteenth century epic poem entitled *Roncesvalles.*

DRAMA did not show very great activity. Additional volumes of the complete works of several prominent writers appeared: e.g., Jacinto Benaventa, and M. Linares Rivas. Also a few writers produced new plays: J. Grau, *El Conde Alarcos;* J. M. Acevedo, *Ley de honor;* and the Alvarez Quintero brothers kept up their usual standard of fecundity. Angel Guimerá, the veteran Catalan dramatist, won a triumph with his peace-play *Jesús que vuelve.*

NOVELS, ESSAYS, MEMOIRS. For the novel, the *Biblioteca Calleja* gave reproductions of works of authors recently dead or still living: e.g., Clarín, Palacio Valdés, and Azorín. Jaime Solá won praise with his *Anduriña.*—Miguel de Unamuno, ex-Rector of the venerable University of Salamanca, published four volumes of his brilliant *Ensayos;* and José Ortega y Gassett published the second volume of his work called *El Espectador.*—For some time before his death José Echegaray had been working upon his memoirs. The first volume (*Recuerdos*) has appeared.

Several interesting books on the war should be noted: R. del Valle-Inclán, *La media noche: Visión estelar de un momento de guerra;* R. Pérez de Ayala, *Herman encadenado: Notas de un viaje a los frentes del Isonzo, la Carnia, y el Trentino;* A. Insúa, *Páginas de la guerra;* E. Pardo Bazán, *Porvenir de la literatura después de la guerra;* Jacinto Benavente, *El año germanófilo* (Benavente is himself violently pro-German); Azorín, *Entre España y Francia* (*Páginas de un francófilo*).

The Spanish Royal Academy's activities were chiefly as follows: Fac-simile reproduction of the *Obras de Cervantes:* vol. i, *La Galatea*, vol. ii, part 1 of *Don Quijote;* Lope de Vega, *Obras*, vol. iii (new edition by Cotarelo); a newly revised edition of its Spanish Grammar. In addition the Academy awarded the usual prizes: the "Fastenrath," to Enrique de Mesa, *El Silencio de la Cartuja;* the "María del Pilar Rovera," to R. Pamplona y Escudero, *El cura de misa y olla;* the "Piquer," to José Rincón Lazcano and Eduardo Montesinos, *La Alcaldesa de Hontanares;* and the "Chirel," to Francisco A. de Icaza, Mexican Ambassador to Spain, for his articles of literary criticism.

SPECTRO-HELIOGRAPH. See ASTRONOMY.

SPECULATION. See AGRICULTURE.

SPENCE, FRANCIS STEPHENS. A Canadian municipal expert and temperance advocate, died in Toronto, Ontario, March 8, 1917. He was born in 1850 in Donegal, Ireland, but early came to Toronto, with the public affairs of which city he was identified for many years. Up to 1882 he was a headmaster of schools. Between 1892 and 1915 he served frequently as alderman and as city controller, gaining wide recognition as an authority on municipal government and especially finance. Mr. Spence was largely responsible for important public undertakings, notably the Ontario Hydroelectric system and the $19,000,000 Toronto harbor improvement. Throughout Canada he was known as a leading advocate of temperance, a cause to which he devoted his oratorical and editorial abilities. He served as managing editor of the *Pioneer*, an organ of the temperance movement, and had been editor of several similar journals.

SPIES, GERMAN. See UNITED STATES AND THE WAR.

SPINACENE. See CHEMISTRY.

SPIRITUALISTS' ASSOCIATION, NATIONAL. This association, which was incorporated in 1893 to combine for more effective working purposes the local Spiritualist societies of the United States, had, in 1917, over 1000 local working societies. There were 22 State associations, over 500 other local societies, and 32 camp meeting associations. More than 200 churches and temples, together with camp meeting property, were valued at about $6,500,000. The number of ordained ministers was 500, of public mediums 1500, and of adherents over 600,000. The annual convention, which was held in New York City, was the most successful thus far in numbers of delegates and good results achieved. The association, according to an official statement, is making good progress, increasing its local bodies, growing in membership and becoming stronger financially. It is building many local churches and conducting a vigorous propaganda. The itinerant system is rapidly passing away, and ministers are being settled over local societies and churches by the year. The officers of the association are: President, George D. Warne; secretary, George W. Kates; treasurer, Cassius L. Stevens.

SPIROCHETE BRONCHITIS. This affection has been encountered in Ceylon, India, the Philippines, Europe, and elsewhere, and was discovered by Castellani. It is sometimes known as Castellani's Bronchitis. It is due to a spirochete, which may be observed under the microscope, in the sputum. Spirochete bronchitis is chiefly interesting because it is nearly always mistaken for tuberculosis. There is an acute and a chronic form, the former running its course in five or six days and being accompanied with high fever and profuse expectoration of a whitish or yellowish sputum. The chronic form is characterized by a hectic fever, resembling that of tuberculosis, with cough, expectoration, and sometimes bleeding from the lungs. Arsenic seems to be the most reliable remedy and salvarsan is recommended on account of its well-known antagonistic effects upon spirochetes.

SPORTS. War brought about unusual conditions in every realm of sport during 1917. The winning of championships and the establishment of new records which in former years had served to measure the success or failure of athletic endeavor afforded no satisfactory standard in the period just passed. Championship events in the various sports were for the most part abandoned, while the presence of star athletes in the army and navy caused a big drop in the number of record breaking performances.

If the achievements of the year in the way of a wider participation in sports than ever before and in the aid rendered the government by the athletes individually and by athletic enterprises in general be considered, 1917 could be regarded as the banner year in the history of sport in the United States.

The effect of the war on the several branches of athletics and the valuable contributions made by athletics and athletes to the country's need in the crisis are covered in the various YEAR BOOK articles on ATHLETICS, TRACK AND FIELD; BASEBALL; GOLF; TENNIS; etc.

SQUASH. See RACQUETS.

STANDLEY LAKE DAM. See DAMS.

STARS. See ASTRONOMY.

STATE BANKS. According to the report of the comptroller of the currency there were in the United States on June 20, 1917, a total of 20,319 State banks. These included the regular commercial State banks, savings banks (q.v.), loans and trust companies, and private banks. Their total resources were $20,836,000,000, an increase of $2,500,000,000 over 1916. Loans and discounts aggregated $11,674,000,000, an increase for the year of $1,510,000,000; their investments in bonds and securities totaled $4,991,000,000. Their liabilities included capital of $1,191,000,000; surplus of $1,183,000,000; and individual deposits of $16,766,000,000.

The regular commercial State banks numbered 15,988, an increase over 1916 of 518; included here were stock savings banks of Virginia, South Carolina, Tennessee, Michigan, Wisconsin, North Dakota, Kansas, Montana, Idaho, and Nevada, as well as the loan and trust companies of eight States. These nearly 16,000 banks had aggregate resources of $6,799,669,000. Their loans and discounts were $4,111,500,000; individual deposits, $5,390,800,000; capital stock paid in, $600,064,000; and surplus and undivided profits, $395,130,000. There were 1274 of these banks qualified to receive deposits of the Federal Postal Savings System on June 30, 1917.

Loan and trust companies, not included above, numbered 1608 on June 20. Their aggregate resources were $7,899,800,000, including loans and discounts of $4,311,700,000, and investments in securities of $1,789,765,000. Their capital was $505,507,000; surplus, $534,778,000; undivided profits, $107,006,000; and individual deposits of $5,797,000,000. While the growth of loan and trust companies in 1917 was substantial it was less phenomenal than in some recent years. A considerable number of the larger companies entered the Federal Reserve System during the year (see BANKS AND BANKING). There were 568 trust companies qualified as postal savings depositories in June, 1917.

There were 936 private banks had total resources of $197,937,000. Their total deposits were $161,924,000. Only 13 of them were qualified to receive postal savings funds and these were all in Indiana.

STATEN ISLAND GARBAGE REDUCTION PLANT. See GARBAGE AND REFUSE DISPOSAL.

STATISTICAL ASSOCIATION, AMERICAN. The seventy-ninth annual meeting of this organization was held at Philadelphia, December 27-29. In conjunction therewith were numerous other organizations as described under *American Economic Association* in the article POLITICAL ECONOMY. Among the addresses were the following: "The Mortality Rate in Childhood," by Louis I. Dublin of the Metropolitan Life Insurance Company; "Methods of Analyzing Occupational Vitality," by Arme Fisher of the Prudential Insurance Company; "Some Preliminary Results of Industrial Fatigue," by Professor Robert E. Chaddock of Columbia University; "Infantile Mortality Statistics of the Children's Bureau," by Dr. R. M. Woodbury of the Children's Bureau. In a joint session with the American Association for Labor Legislation, presidential addresses were given by Professor Irving Fisher, on "Health and War," and by Professor Allyn A. Young on "Statistics in War and Peace." In a session devoted to "The Organization of War Statistical Work in Washington," addresses were given by Walter M. Adriance of the Bureau of Research of the War Trade Board, and by Leonard P. Ayres of the Division of Statistics of the Council of National Defense. The following addresses related to "The Vital Statistics of the War": "Army Anthropometric Statistics," by F. L. Hoffman of the Prudential Insurance Company; "Plans for the Vital Statistics of the War," by John S. Fulton of Washington, D. C., and "The Development of Medical Sanitary Statistics," by Walter F. Willcox of Cornell University. There was an address by Horace Sechrist of Northwestern University of "Statistical Units as Standards"; and a round table discussion of "Internal and External Statistical Needs of American Business." The association issues *Quarterly Publications of the American Statistical Association.*

STEAM ENGINES. As distinct from the steam turbine (see STEAM TURBINES) the reciprocating engine was being constructed with practically no change of form during the year, and few if any radical developments. There was considerable demand for marine engines in connection with shipbuilding (q.v.). A notable engine built and put into service during the year was a rolling-mill reversing engine with cylinders 36 in. and 70 in. with a 60-in. stroke. This engine when running at maximum speed was capable of developing more than 30,000 horsepower if the maximum torque occurred at the same time, but under conditions of service it was doubtful whether it would be called upon for more than 11,000 horsepower. The engine was geared and its approximate weight was 1,350,000 pounds.

STEAM TURBINES. The notable list of steam turbines ordered or designed in 1916 (see YEAR BOOK for 1916) was increased in 1917 by a 45,000 kilowatt two-cylinder, compound unit, and a 70,000 kilowatt, three-cylinder machine, the largest ever made, for the Duquesne Light Company of Pittsburgh. With the completion and testing of these various large units, it would be possible to decide definitely as to their efficiencies and economy, for the mammoth unit was not being accepted by the engineers as a demonstrated success, and it was claimed that certain further developments were essential. Improvements in designs for high pressure and intermediate heating of the steam to raise the average temperature were two of the suggested improvements. There was considerable diversity in the activities of the various makers of steam turbines. By some the impulse turbine with a single-cylinder machine was being advocated, even in the larger sizes. On the other hand the reaction turbine with two or even three cylinders was being favored and such machines were being made. In the impulse turbines, symmetrical cone-shaped construction was the general aim of the designers, with the elimination of angles and the securing of straight paths for the steam. The earlier stages were becoming smaller in diameter and fewer to minimize the friction and leakage, and better material was being used for the blades. A single throttle valve was replacing the numerous control values regulating the quantity of steam.

Smaller turbines were manufactured in large numbers and were said to be replacing the reciprocal engine even in the small office building plants, especially in the western part of the United States. The advantages claimed were small space and little attendance required. The use of a reduction gearing to permit economical speeds in different classes of work was a further advantage and the fact that there was no oil in the exhaust steam also promoted economy and speed. Improvements were made in the small turbines used for various engine-room auxiliaries and the advantages were clearly demonstrated. The turbine was proposed for locomotive drive on the score that with high speed and limited space more power could be concentrated. No definite experiments, however, to demonstrate its application in this field were recorded.

STEEL. See IRON AND STEEL.

STEFANSSON EXPEDITION. See POLAR RESEARCH.

STELLAR PHOTOGRAPHY. See ASTRONOMY.

STERILIZATION OF CRIMINALS. See PENOLOGY.

STEVENS INSTITUTE OF TECHNOLOGY. A non-sectarian institution for the technical education of men, located at Hoboken, N. J. In the fall of 1917 there were 520 students and 41 members of the faculty. Louis Alan Hazeltine was appointed acting professor of electrical engineering to succeed Professor Albert F. Ganz, deceased. Volumes in the library numbered about 12,000. Productive funds in 1917 amounted to $1,550,000 and the income therefrom to $68,566. Compulsory attendance at military drill is required of all classes. The institute was founded in 1870. President, Alexander C. Humphreys, LL.D.

STILL, ANDREW TAYLOR. Founder of the osteopathic school of medicine. He was born on August 6, 1828, and died on December 12. 1917. He served as a surgeon and major of the Twenty-first Kansas Volunteers during the Civil War. In 1874 he began to practice osteopathy. He was openly and bitterly opposed by his former friends in medical science but with the aid of his sons established on a firm foundation the new method of healing. In 1892 he founded the American School of Osteopathy at Kirksville, Mo. He was the president of this institution. His writings include: *Autobiography of A. T. Sill; Philosophy and Mechanical Principles of Osteopathy; Osteopathy, Practice, and Research.*

STIMSON, LEWIS ATTERBURY. A noted surgeon and professor of surgery in Cornell Medical College. He was born in 1844 and died on September 17, 1917. He was graduated from Yale University in 1863, and later from the Bellevue Medical College in New York City. During the Civil War he served on the staff of General Terry. Since the outbreak of the European War, Dr. Stimson had made two visits to the battlefront in the interests of relief. He was interested especially in the care of French orphans and was a member of several French societies devoted to this work. He wrote: *A Treatise on Dislocations; A Treatise on Fractures; Operative Surgery;* and had translated Lacombe's *History of France.* He was a member of the American Surgical Society and the New York Medical Society.

STOCK, FREDERICK. See MUSIC, *Festivals.*

STOCKHOLM PEACE CONFERENCE. See SOCIALISM.

STOCK RAISING AND MEAT PRODUCTION. The importance of live stock production became recognized during the year 1917 as second only to wheat production. This was particularly true of meat food products and wool. An evident tendency towards a shortage in the world's supply of live stock before the outbreak of the great war was accentuated as the conflict progressed. The slaughter of animals in Europe had been very great. An estimate was published by the United States government, based on confidential reports, to the effect that by 1917 the herds of Europe had been diminished by 28,000,000 cattle, 54,000,000 sheep, and 32,000,000 hogs. Of these animals about 33,000,000 all told were found in the allied countries. The decrease in breeding stocks among the Central Powers could not be accurately determined, but fairly reliable information indicated that the slaughter of meat animals in those countries was continuing and that the situation was very acute at the end of 1917.

In the southern hemisphere stocks of beef cattle appeared to be keeping up, but supplies of sheep were reported as considerably less in Australia in 1915 than in the previous year. The decrease of all sheep in the world was estimated by the National Association of Wool Manufacturers of the United States at 18,000,000, of which the unfavorable season in Australia in 1915 accounted for 12,000,000 head. Cattle supplies in the United States were apparently larger than at any time during the past ten years. Supplies of hogs, on the other hand, were less than they were the preceding year, although probably larger than they were five years ago. The supplies of sheep still showed a slight tendency to decrease in the United States.

Meat Supplies. The Allied Powers were depending largely on the United States for supplies of meat for civilian and military consumption. This resulted, as stated in the 1916 Year Book, in a great increase in meat exports from the United States. The demand was met by a certain amount of increased production in the United States and by economy in domestic consumption. For the fiscal year ended June 30, 1917, there was a slight decrease in the total meat exports from the United States, as compared with the previous fiscal year, the total being 2,400,907,776 pounds of meat and meat products in 1917, as compared with 2,500,566,309 pounds in 1916. The decrease was mainly in beef and beef products.

Pork exports for the three fiscal years of the war and the fiscal year preceding were as follows:

1917	1,501,960,961	pounds
1916	1,462,696,961	"
1915	1,107,160,680	"
1914	922,747,021	"

The average amount of total exports of pork products for the fiscal years 1911, 1912, and 1913, was 979,907,181 pounds. Naturally the greatest amount of the increase in pork exports during the war was found in the exports of bacon, which increased from 193,964,252 pounds in the fiscal year 1914 to 667,156,061 pounds in the fiscal year 1917.

The trend of the trade in meat animals in the United States is clearly indicated in the reports of the Federal Meat Inspection Service, which appear in the accompanying table for the fiscal years 1907 to 1917, inclusive.

NUMBER OF ESTABLISHMENTS AND TOTAL NUMBER OF ANIMALS INSPECTED AT SLAUGHTER UNDER FEDERAL INSPECTION ANNUALLY, 1907-1917.

Fiscal Year	*Establishments*	*Cattle*	*Calves*	*Swine*	*Sheep*	*Goats*	*All Animals*
1907	708	7,621,717	1,763,574	31,815,900	9,681,876	52,149	50,935,216
1908	787	7,116,275	1,995,487	35,113,077	9,702,545	45,953	53,973,337
1909	876	7,325,337	2,046,711	35,427,931	10,802,903	69,193	55,672,075
1910	919	7,962,189	2,295,099	27,656,021	11,149,937	115,811	49,179,057
1911	936	7,781,030	2,219,908	29,916,363	13,005,502	54,145	52,976,948
1912	940	7,532,005	2,242,929	34,966,378	14,208,724	63,983	59,014,019
1913	910	7,155,816	2,098,484	32,287,538	14,724,465	56,556	56,322,859
1914	893	6,724,117	1,814,904	33,289,705	14,958,834	121,827	56,909,387
1915	896	6,964,402	1,785,902	36,247,958	12,909,089	165,533	58,022,884
1916	875	7,404,288	2,048,022	40,482,799	11,985,926	180,356	62,101,391
1917	883	9,299,489	2,679,745	40,210,847	11,343,418	174,649	63,708,148

Due allowance must be made for the fact that the average weight of the animals slaughtered in 1917 was less than in the previous year. On account of the scarcity of grain, cattle and hogs had not been finished to as heavy weights as in years when there was an abundance of corn.

Wool Supplies. The problem of the wool supplies for domestic use and the Allied armies received attention from the British Government from early in the war and there were many rumors of possible official steps by the United States being taken to safeguard supplies. The British Government was buying the home wool clip and that in South Africa and Australasia, on the basis of 30 per cent above pre-war prices. Agents of the British Government classify the clip. Some objection was made to this method of handling the matter in South Africa, but there was no criticism from Australia and New Zealand so far as could be learned.

No steps of this nature up to the end of 1917 were taken for handling the American or Argentine clip. The regulations of the United States government, however, gave the government an option on imported wool at 5 per cent below prices prevailing on July 30, 1917. Wool production in 1916 was computed by the National Association of Wool Manufacturers at 2,717,233,100 pounds, as compared with 2,836,519,134 pounds in 1915, showing a decrease of over 119,000,000 pounds. No accurate estimates for production in Central Europe, Russia, and Turkey were available, but it was thought that the production in those countries was less than had been conceded.

Live Stock Production Campaign. A conference of representative live stock men was called at Washington by the secretary of agriculture and the food administrator on September 5-7, at which the secretary of agriculture presented problems of production which must be met in order for the United States to do its share in furnishing animal food products and wool supplies, and the food administrator discussed the problems confronting him in connection with the purchase of meat on account of the United States and Allied governments, the Red Cross, Belgian relief, etc.

The topic of liveliest interest was the question of price adjustments of live stock products, and it was emphasized as essential to stabilize prices in such a way that the consumer would be protected and the producer would receive a remunerative figure for his animals. To that end a committee representing the pork producers subsequently worked out a system, the main purposes of which, as announced by the food administration, were to see that the producer at all times could count on a fair price for his hogs that would be profitable to him, to encourage farmers to increase the number of hogs bred, to limit the profit of the packer and the middleman, and to eliminate speculation. The plan of the food administration contemplated the licensing of packers, which was put into effect November 1, and the exercise of rigid control. It was announced in the press that profits in the meat business must in no case exceed 2.5 per cent of the sales, and that the annual earnings of packers could not exceed 9 per cent of the average capital necessarily used in the business.

The minimum price to be attempted to maintain for hogs was about $15.50 per hundredweight for the average of the packers' droves on the Chicago market during the fall and winter months, and a ratio of pork to corn prices of about 13 to 1 was suggested; that is, as to the hogs farrowed in the spring of 1918 the attempt will be to stabilize the price so that the farmer can count on getting for each 100 pounds of hog ready for market, 13 times the average cost per bushel of the corn fed into the hogs. This is not a guaranty, but represents the intention and policy of the Food Administration. No announcement was made of similar arrangements concerning price regulation of beef cattle.

In order to insure sufficient pork supplies for the United States and its Allies, the government determined upon an increase of 15 per cent in production in the United States as necessary in 1918. This meant that approximately 10,000,000 more hogs must be produced in 1918 than in 1917. The amount was prorated to the different States according to the 1917 corn yield, the increase allotted varying from 5 per cent in Georgia and West Virginia to 25 per cent in Kansas and Iowa, 30 per cent in Alabama, and 50 per cent in Missouri. An active campaign was being projected in the different States, and gratifying reports were being received as to its success.

The supply of brood sows was unusually short, the shortage being estimated as high as 20 to 30 per cent in various corn belt States. The shortage was brought about by the scarcity of corn of the 1916 crop and the extremely high prices paid for hogs during the first nine months of 1917. To overcome this shortage, the Department of Agriculture was urging the breeding of sows for late litters as well as for early litters.

The Beef Cattle Industry. Probably the most noteworthy event in beef cattle affairs during the year was the release from quarantine against Texas fever of more than 70,000 square miles in the South. See Veterinary Science.

The beef cattle industry on the range suffered during the year from one of the most serious droughts in the history of the country. This was particularly acute in the southwestern part of Texas, where in some sections rain had not fallen for fifteen months or more. In some parts of the State three-fourths of the cattle were shipped out, thus saving the best of the breeding herds. The Department of Agriculture assisted in this, securing the movement of approximately 150,000 head of breeding cattle, mostly cows and heifers, into Louisiana, Arkansas, and States further east, shipments going as far as Florida and Georgia.

The drought prevailed to a greater or less extent over the entire Great Plains region, resulting in considerable sacrifice of cattle. By means of the agricultural extension service and other agencies interested, efforts were made to safeguard the Western herds.

The Southern country offers the best opportunity for the expansion of the beef cattle industry which yet remains undeveloped in the United States. Not only can the farms of the South carry greatly increased numbers of meat animals, but the cut-over timber lands of that section offer a field for very largely increased production. The area of these lands was estimated at 76,000,000 acres, to which the cutting of timber was adding about 10,000,000 acres annually. Eventually the cut-over timber lands of the South would include an area of approximately 300,000,000 acres.

To consider this subject, two conferences were held at New Orleans during the year under the auspices of the Southern Pine Association, as a result of which the Southern Cut-Over Land Association was established as a bureau of the Southern Pine Association, to develop the cattle and sheep grazing herds on the cut-over lands, to encourage the practice of tick eradication, and to study the forage producing possibilities of cut-over lands. Similar organizations had been perfected in Florida, Georgia, and North Carolina. Cattle ranches were being established in this territory, and interest was being shown by Western sheep ranchmen in the possibility of extending their operations not only into the Southern cut-over lands, but into those of the North as well.

With the beef cattle development in the South, packing plants were being established throughout that territory.

The Six-Day Market. An important step in marketing live stock for slaughter was the establishment of a zone system of shipment, with the markets open six days in the week. One of the evils of the meat animal business during recent years was the tendency for receipts on the primary markets to be concentrated on three days of the week, often with a reduction to two days. This practice had resulted in railway congestion, in congestion in the yards, and had been thought by many to be responsible for some of the sudden slumps in prices. In November the Food Administration issued regulations to put into effect a zone system of handling receipts on the Kansas City market, thus establishing a six-day market with advantageous regulation of the traffic, and the results were so satisfactory that it was extended to the Chicago market. The effect was expected to be beneficial to the entire live stock industry.

The Outlook. The future outlook for the animal industry in the United States, viewed from every possible angle, at the end of 1917, was extremely promising. The demands on animal producers from the patriotic standpoint and as a duty to our Allies were being given due weight, and the obligation was stimulated by the prospect of substantial profit. Breeders felt that the call was not only immediate, but that the coming of peace would necessitate still further demands on American flocks and herds to restock European farms. See Leather.

STOCKS AND BONDS. See Financial Review.

STOTT, Henry Gordon. An American electrical engineer, died in New Rochelle, N. Y., January 15, 1917. He was born in 1866 in the Orkney Islands, Scotland, and was educated at Edinburgh at Watson's College School, and in Glasgow at the College of Science and Arts and the Glasgow and West of Scotland Technical College. His early engineering experience was gained in Scotland, England, and Spain, during which period he held various positions and did much experimental work. By 1891 he had settled in the United States as engineer with the Buffalo Electric Company, for which he did important construction work. Since 1901 he had been superintendent of motive power for the Interborough Rapid Transit Company in New York, and since 1912 had served the New York Railways in a like capacity. Mr. Stott was a member of numerous engineering societies, and in 1907-08 was president of the American Institute of Electrical Engineers.

STRACCIARI, RICCARDO. See MUSIC, *Opera*.

STRAITS SETTLEMENTS. A British crown colony in Malaysia, composed as follows:

	Sq. M.	*Pop., 1911*	*Pop., 1916*	*Capital*
Singapore ...	307	311,985	358,912	Singapore
Penang	571	278,003	294,858	George Town
Malacca	720	124,081	141,444	Malacca
Total.....	1,598	714,069	795,214	Singapore

The settlement of Singapore includes the island of Singapore (217 square miles), Christmas Island (62 square miles), Labuan Island (28 square miles), and the Cocos or Keeling Islands, the largest of which is five miles by one-fourth of a mile. The area of the Cocos is not included in the foregoing table. The settlement of Penang includes the island of Penang (108 square miles), Province Wellesley (280 square miles), on the Malay Peninsula, and the Dindings territory (183 square miles). Malacca is on the mainland of the peninsula. The population of Singapore Island is gathered chiefly in the city of Singapore, one of the principal ports of the East. The colony produces tapioca, rice, and rubber (chiefly in Malacca and Province Wellesley), and sugar (in Province Wellesley). Coal is mined in Labuan. Trade statistics are given below in pounds sterling:

	Imports		*Exports*	
	1914	*1915*	*1914*	*1915*
Singapore	38,799,827	40,289,133	27,591,480	35,995,659
Penang	13,621,595	13,412,613	12,069,406	12,012,256
Malacca	1,192,556	1,318,694	1,937,732	3,089,390
Labuan	124,350	159,180	98,700	124,340
Christmas Is.	34,251	43,432	252,550	74,376
Dindings	33,935	33,629	43,048	66,014

Revenue, 1915, £1,648,697 (1916 estimate, £1,362,192); expenditure, £1,189,598. The debt stood January 1, 1916, at £6,913,352.

STREET TRAFFIC. See CITY PLANNING.

STRIKES. The year 1917 was not notable for any strikes of unusually spectacular character, yet labor disturbances were numerous, perhaps three times as numerous as usual, and some of them, as those in copper mining and shipbuilding, had important consequences because of their relation to essential war industries. Opinion continued to favor industrial arbitration and conciliation (q.v.) and new machinery to these ends was set up. The Industrial Workers of the World were prominent in numerous labor disputes. In September President Wilson appointed a commission consisting of Secretary of Labor William B. Wilson, J. L. Spangler of Pennsylvania, and Vernon Z. Reed of Denver, business men, and John H. Walker and E. P. Marsh, respectively heads of the Illinois and Washington State Federations of Labor, to investigate the labor situation in the West and Southwest, especially with reference to the activities of the I. W. W. (q.v.). A few of the important strikes not mentioned in the articles just referred to are described below. See also INJUNCTION; and LABOR.

WAR WORK. No sooner had the United States entered the war than the labor situation became in some ways fraught with new dangers. There were occasional reports of employers with government contracts reducing wages or lengthening hours or otherwise reducing standards and taking refuge behind the widely-held doctrine that for workers to strike was for them to give aid to our enemies and therefore treasonable. On the other hand the tremendous demand for labor of various skilled kinds was here and there utilized as an opportunity by labor to enforce its demands: and here again the government contract was a factor. Many contracts were let on a "cost plus" basis, that is, cost plus a stipulated rate of profit. Hence the contractor, being in a position of certain reimbursement by the government, and indeed having his own profits increased by increased costs, was easily forced by the organized demand of his workers, frequently by brief strikes, to better terms. Another factor that gave labor when organized an unusual opportunity to secure better terms was the need of extreme haste in the completion of many contracts. In the construction of the army cantonments, for example, many thousands of men at each camp were required at top speed to make things ready before cold weather came, a condition making even the threat of a strike, in view of labor shortage in various lines, quite alarming. These conditions resulting in many strikes in plants engaged on government work very early led to proposals for machinery of arbitration and conciliation. It was widely felt that steps should be taken by the government to standardize labor conditions that must be met by plants engaged on war work and that contracts should specify that these conditions must be established and maintained. This, however, was not carried out with any completeness owing to the great variety of conditions in different plants and different parts of the country. Solution was sought, however, by plans for mediation and by vigorous efforts to secure the patriotic coöperation of both labor and capital. The Committee on Labor of the Advisory Commission of the Council of National Defense, of which President Gompers of the American Federation of Labor was chairman, appointed, among others, subcommittees on wages and hours; mediation and conciliation; welfare work; cost of living and domestic economy. All these sought to secure the proper standards and to engender the spirit of mutual confidence into industry. Finally there was created through the joint action of the government, the Council of National Defense, and labor organizations, the Labor-Adjustment Commission to be composed of three representatives of the government, three of employers, and three of employees. Mr. V. Everitt Macy was made chairman by President Wilson. All disputes arising in plants working on government contracts were to be referred to this commission. It was itself to decide all cases involving more than 1000 workers and was to appoint committees to hear and decide disputes of less extent. The awards of the commission or any of its committees were to be binding upon both employers and employees. See Arbitration and Conciliation, Industrial.

Shipping. A threatened strike in August of 100,000 workers in shipbuilding yards of the Pacific Coast where a strike vote had been taken, as well as distinct dissatisfaction among the labor in yards on the Eastern Coast was largely responsible for the creation of the abovementioned Adjustment Commission. On August 24 an agreement was signed by all parties submitting questions of wages, hours, and conditions to an adjustment board of three, one to be named by President Wilson, one by President Gompers of the American Federation of Labor, and one by the Emergency Fleet Corporation. Late in September, however, trouble again broke out when 30,000 men working in San Francisco yards walked out on a demand for a 50 per cent increase of wages, and 6500 longshoremen at New York City struck to enforce a demand for discharge of a foreman. About three weeks before this the government had entered into an agreement with the International Longshoremen's Association whereby both the government and shipping companies were bound to recognize union wages, hours, and conditions in each Atlantic, Gulf, and Pacific port and the workers were bound not to strike so long as labor standards were maintained. The agreement provided for adjustment of points of difference by a national adjustment committee consisting of Walter Lippmann representing the War Department, Messrs. Franklin and Raymond representing respectively the foreign and coastwise shipping lines, and T. V. O'Connor, representing the longshoremen. In both cases these agreements were not legally binding upon the strikers themselves, as they had had no part in making the arrangements. Their union officials had, however, by signing the agreements or "labor treaties" placed the membership under obligations. The San Francisco men soon returned to work pending an adjustment of the demand by a board consisting of V. Everitt Macy appointed by the president, E. F. Cary of the Emergency Fleet Corporation, and Alfred J. Berres of the American Federation. Differences of the longshoremen with a foreman named Labardo began in July on account of his overbearing manner. The men on his pier walked out because he refused to allow a workman to go to a drug store to get needed medicine. An agreement was made to arbitrate, Labardo was temporarily removed, then reinstated, while no action on arbitration was taken. The men again struck and for a time refused again to arbitrate their personal differences with the foreman. Finally a committee of the National Labor Adjustment Board, Walter Lippmann and T. V. O'Connor, above mentioned, and R. B. Stevens of the Shipping Board, induced the men to return to work pending arbitration.

Copper Mines. From the standpoint of the industry of the country the extensive strikes in copper mining areas, especially in Arizona, were among the most important of the year. These strikes were of sufficient importance to cut off production entirely in the properties of the Inspiration, the East Butte, and other companies during the months of July and August, while the production of the Anaconda Company fell from over 28,000,000 pounds in May to 20,000,000 pounds in June, 12,000,000 pounds in July, 11,000,000 pounds in August, and 2,800,000 pounds in September. These strikes were widely attributed to agitators of the Industrial Workers of the World (q.v.), but in fact this organization was only slightly involved. The above mentioned commission appointed by the president in September effected a settlement in the Arizona and New Mexico region in October and thereafter in other sections. It was agreed that a committee at each mine consisting of miners should be formed to present grievances to employers; that all strikers should be reëmployed except those guilty of seditious utterances; and that the government should appoint an arbitrator to settle disputes regarding facts. The settlement of these strikes put 6000 men producing 10,000,000 pounds of copper per month back to work. An important incidental aspect of these strikes was the determination of some 4000 Mexican miners to return to Mexico.

New York Clothing Trades. Probably the most important strike of the year from the standpoint of numbers of laborers involved was that of nearly 60,000 members of the Amalgamated Clothing Workers of America, engaged on men's and boy's clothing in New York City, who went out on December 13, 1916. They demanded an increase in pay of $2 per week and a reduction of hours from fifty to forty-eight. They afterwards modified the wage demand to an increase of $1 per week, and on this basis agreement was made with a group of about 15,000 workers. By the opening of 1917 nearly 25,000 workers had returned under these conditions. The American clothing manufacturers, representing the employers of over 30,000 workers, vigorously resented the demands of the union and sought in various ways to break up the morale of the strikers. About January 10, however, a settlement was effected through the intervention of William O. Thompson of the Arbitration Board formed by the Hart, Schaffner, and Marx Co. of Chicago and Judge Julian W. Mack of the Arbitration Board in the dress and waist industry in New York. The forty-eight-hour week was established and an advance of 12 per cent in wages granted.

Philadelphia Sugar Strike. Some 2000 unorganized workmen, nearly all foreigners, Poles and Lithuanians, with a sprinkling of Russians, Germans, and Italians, employed by three sugar refining companies of Philadelphia, struck on February 7 for better pay and altered conditions. They were at once organized by I. W. W. leaders into the Sugar Workers' Union, which formulated five demands: Reduction in hours from twelve to ten per day; time and a half for overtime; double time on Sundays and holidays; general raise of five cents an hour instead of the bonus of 8 per cent on the January wages offered by the companies on the day the strike began; recognition of the right to organize. The companies, three in number, flatly refused to consider these demands, or to meet a committee representing the strikers. The general manager of the Pennsylvania Refining Co. declared that the strikers had no case, as they were receiving twenty-five cents an hour or $3 per day; that the strike leaders would be taken back under no circumstances; that others would be taken back if their places had not been filled; that unionization of any sort would be bitterly fought. Strikebreakers were brought in and in addition to pay received board and lodging from the companies. While no strike benefits were available, most of the strikers readily found work elsewhere.

Great Lakes Seamen. For some years there has been nearly continuous controversy between the Lake Seamen's Union and the Lake Carriers' Association. A strike of 10,000 of these seamen employed on the Great Lakes was prevented by the United States Shipping Board in the fall. The seamen had made six demands, including a substantial increase in wages and the abolition of the so-called welfare plan. According to this plan sailors may be hired only through the assembly rooms established in various ports and where certain comforts are provided upon the payment of one dollar per year. Upon the payment of this fee the worker is given a discharge book. No captain may hire a man for lake service who does not possess one of these books. When hired the book is deposited with the captain or chief engineer. When service terminates the book is returned with an entry indicating the character of the service. The book, however, is returned only if the service is good or fair. The union claimed that this system is in effect the maintenance of a black list. The compromise settlement secured the advance in wages, but no modification of the welfare plan. At its convention in December, 1916, the International Seamen's Union had requested the Department of Labor to investigate this plan. In September the Bureau of Labor Statistics announced that such an investigation had been made and that the results would soon be published.

Statistics for 1916. The Bureau of Labor Statistics in April reported a total of 3157 strikes and 108 lockouts during the calendar year 1916. This was more than double the number of strikes, but only 60 per cent of the number of lockouts in the calendar year 1915. The greatest number of strikes occurred in May, April, and June, respectively, these being the months in which the greatest number of trade agreements terminate. Ten per cent of the strikes occurred in New York City. There were also numerous strikes in the vicinity of New York, in Newark, Bayonne, Edgewater, Jersey City, Hoboken, Weehawken, and along the Hudson. Coal strikes throughout the country involved more than 350,000 men. Many of these were in the anthracite region and connected with the disagreement over the eight-hour day and the price of powder. There were also strikes of bituminous coal miners in Pennsylvania, West Virginia, Ohio, Kentucky, Kansas, Oklahoma, and Texas. There were 564 strikes in Pennsylvania; 339 in Massachusetts; 272 in Ohio; 224 in New Jersey; 148 in Illinois; and 129 in Connecticut. In 112 strikes women alone were concerned; while in 225 strikes and 9 lockouts both men and women were involved.

The greater number of strikes occurred in the following industries: metal trades, 487; mining, 395; building, 348; textiles, 222; transportation, 205; clothing, 187; teaming, 94; baking, 65; and iron and steel, 67.

As regards causes 1076 strikes related to wages; 110 to hours; and 374 to both wages and hours; 257 were for the recognition of the union; and 208 for recognition of the union and wages or hours. There were 121 strikes because of discharge of employees, and 70 because of the employment of non-union men. As to results 471 strikes terminated in favor of employers; 706 in favor of employees; 542 were compromised; in 70 employees returned pending arbitration.

Other Countries. In other countries as in the United States there was a great deal of industrial unrest expressed partly by numerous strikes and lockouts, but without labor movements on a large scale. The general strike at Barcelona, Spain, was due very largely to political agitation. In England and France industrial conditions were on the whole quite peaceful, because of the coöperation of the governments with labor leaders, the obvious efforts of the governments to treat labor fairly by adjusting wages to rising costs, and the patriotic willingness of labor to advance the war. The latter motive, however, did not prevent strikes in both countries that were somewhat serious, nor did it prevent labor leaders from advancing repeated proposals for an announcement and discussion of peace terms. The *Labor Gazette* summary of trade disputes in Great Britain for the first ten months of 1917 showed 455 involving 205,600 workpeople, as compared with 538 involving 531,400 workpeople for the same period in 1916. The time lost in 1917 amounted to 2,223,000 days, as against 4,128,000 in 1916.

In Japan a very extraordinary rise in prices resulted in an unprecedented number of labor disturbances. Index numbers based on the prices of foods and other commodities, according to the Bank of Japan, showed a rise of 60 per cent from July, 1914, to July, 1917, and a rise of 41 per cent between July, 1916, and July, 1917. In general strikes were of short duration, employers advancing wages in most cases from 15 to 20 per cent. For government employees repeated advances were made.

In August, 1917, the German Department of Labor Statistics summarized labor disputes in 1916. There were 240 strikes in that year, involving 124,188 workers. The number of disputes compared with 141 in 1915, 26 in 1914, and an average of 2595 in each of the years 1909-1913. The number of workers involved, compared with 12,866 in 1915, 91,140 in 1914, and 327,000 in each of the years 1909-13. The number of working days lost aggregated 245,404 in 1916; this was 5 times the loss of 1915, but less than one-tenth of the loss in 1914, and compared with an average annual loss of 11,190,000 days for 1909-13. Of the strikes in 1916, 11.3 per cent resulted in the workers gaining their demands, 34.5 per cent resulted in demands being wholly rejected, while the remainder were settled partly in favor of employers and partly in favor of employees.

STUART, Ruth McEnery. An American author, died in New York May 6, 1917. She was a Southern woman, born in Avoyelles Parish, La., in 1856, and educated in New Orleans. To this city she returned to live for a time after she had been left a widow by Alfred O. Stuart, the cotton planter, to whom she was married as a girl. Later she made her home in New York. Beginning in 1888, when her first story, *Uncle Mingo's Speculations*, was published in the *Princeton Review*, Mrs. Stuart devoted herself to writing fiction and verse concerned with the South and particularly with the negro. Long and appreciative familiarity with the ways of the old-fashioned "darky" and a keen sense of humor helped to make her one of the most entertaining portrayers of now vanishing types and of types that are perennial. Tulane University acknowledged her contribution to the literature of the South by conferring on her the degree of Litt.D. in 1915. The titles of Mrs. Stuart's books include, *A Golden Wedding and Other Tales, Carlotta's Intended, The Story of Babbette, Solomon Crow's Christmas Pockets and Others, In Simpkinsville, Moriah's Mourning, Sonny, Holly, and Pizen, The Woman's Exchange, Napoleon Jackson, George Washington Jones, The River's Children, The Second Wooing of Selina Sue, Aunt Amity's Silver Wedding, Sonny's Father, Daddy Do-Funny's Wisdom Jingles, The Cocoon,* and *Plantation Songs.*

STURMER, Boris Vladimirovitch. Former premier and foreign minister of Russia, died September 3, 1917. He began his career in the Russian Senate in 1872 after studying law at the University of St. Petersburg (Petrograd). When Czar Nicholas was crowned, Sturmer was called from the governorship of Novgorod and put in charge of the ceremonies. After that he was Master of Ceremonies at the capital for some time. He was elected president of the Board of the Zemstvo in the government of Tver in 1892, but two years later again became the governor of Novgorod. In 1896 he became governor of Yaroslav. In 1916 he became president of the Council of Ministers, and minister of foreign affairs, succeeding Goremykin. Sturmer with Rasputin and Protopopov, former minister of the interior, were the leaders of the "Dark Forces" of Russia, which were the chief causes of the revolt against the old régime. In June, 1917, after the revolution, he was indicted under a law which provided a severe punishment for arbitrary transgression by an official of the limits of his rightful power. At the time of his death he was incarcerated in the fortress of St. Peter and St. Paul. Disclosures made by the Russian revolutionists show that Sturmer betrayed Rumania to the Germans. The plans of the latter country's operations were in the hands of the Germans before the operations began. The promise that a Russian army was to support the Rumanian divisions in the Dobrudja was broken and the Rumanians were left to the mercy of von Mackensen. See Russia, *History;* War of the Nations.

STYRIA. A crownland of Austria. Area, 8658 square miles. Population at census of December 31, 1910, 1,444,157 (5.05 per cent of the Austrian total). Austrian subjects in 1910, 1,394,699; of these, German was the vernacular of 983,252 (70.50 per cent); Slovenian, 409,684 (29.37 per cent). Catholics formed 98.06 per cent of the population. The capital is Graz (estimated population June 30, 1914, 156,500). The crownland has a diet of 87 members and is represented by 30 members in the Austrian Reichsrat.

SUBMARINE BOATS. See Battleships, etc.; Naval Progress; Submarines; Submarine Operations.

SUBMARINE OPERATIONS. When, in February, 1915, the German campaign against merchant shipping was first launched, it was immensely popular, both with the nation and the navy. It was looked upon by the people at large as a Roland for Great Britain's Oliver—the blockade of the German coast. Service in the submarine branch was encouraged by increased pay, promotion, honors, decorations, and prize money for ships sunk. Volunteers were plenty and the service popular. The sinkings increased from an average of five a week in March to twenty-two a week in August, and then steadily dropped to two a week in October. The reduction was brought about by several causes. First, the British submarine nets, submarine chasers, patrols, and destroyers were said to have disposed of 50 per cent of all boats that had been completed previous to September 1, 1915. To these losses must be added a considerable number sunk by mines, by running aground, by internment in neutral ports, and by foundering because of defects in hull, machinery, or equipment.

While the magnitude of the losses could be concealed from the German people, the personnel of the navy could not be deceived. Even the more ignorant of the enlisted men were tolerably sure of the facts. They had seen boat after boat sail away and never return. It required no mathematics to deduce the danger of the service. It began to be noised about that submarine duty was not dangerous—it was fatal; that any man who survived a year of it was endowed with marvelous luck. Volunteering stopped entirely and the new crews were drafted from the fleet. As these were green hands it became necessary to establish larger schools for the instruction of officers and men to replace those who were disappearing so fast. Long before this, the naval authorities realized that the boats were too small, too weakly armed, too few in number. New and larger boats were put in hand while the campaign was no longer pressed. Such large boats as were available were sent to the Mediterranean, where the field of operations was wider if less intensive and the anti-submarine defense far less effective.

During the five months between October 1, 1915, and the end of the next February the number of boats was heavily increased. Much more than half of the new craft were of 800 tons or greater. Small boats were built for use only in favorable localities or for mine-laying. All were much improved, particularly in matters of defense, habitability, safety of navigation, and propelling machinery. During this reactionary period the Entente Allies and the neutrals became convinced that the danger of the submarine menace was decreasing and the German people were losing faith in the submarine as a decisive factor in the war. By January, 1916, the number of new boats had reached a figure satisfactory to the Pan-Germanists, led by Tirpitz and Reventlow, and they demanded a renewal of submarine operations on a great scale with all humane restrictions as to non-combatants removed. They carried the day against the wishes of a large part of the government, including, it is believed, the chancellor.

In February, 1916, just as the United States was congratulating itself on the favorable conclusion of the *Lusitania* affair, in which Germany acceded to the demands of the United States government—disavowal, indemnity, and assurances against similar attacks in the future, the new threat was launched. This declared (Austria, February 10; Germany, February 12) that after March 1, 1916, the Central Allies would regard armed merchantmen as belligerents and torpedo them without warning. The new offensive developed slowly. Tirpitz and his followers were wholly dissatisfied and urged unrestricted warfare against all vessels trading with the Entente countries. This was refused and Tirpitz resigned on March 16. His successor, Vice-Admiral von Capelle, continued the campaign.

On March 24, the Cross-Channel passenger steamer *Sussex*, with about twenty-five Americans among its passengers, was sunk without warning. On April 20, after some diplomatic correspondence, President Wilson informed the German government that unless it would declare and effect an abandonment of its existing methods of submarine warfare, the United States would sever diplomatic relations. On May 5, the German government acceded to the United States demands and stated that "vessels both within and without the area declared a naval war zone shall not be sunk without warning and without saving human lives unless the ship attempt to escape or offer resistance." But, if the United States should fail to secure "freedom of the seas" from Great Britain, "the German government would then be facing a new situation in which it must reserve to itself complete liberty of decision." The campaign against Entente and neutral merchantmen—especially the latter—was greatly checked during the American negotiations and for about three months thereafter, but was resumed with increased energy at the end of July, culminating in November when 152 belligerent and 68 neutral vessels were sunk. In December and January the destruction of neutral vessels exceeded that of belligerents in the proportion of nearly two to one. This variation in submarine activities much reduced the peril of submarine work, for no danger was to be apprehended from neutrals and attacks on enemy vessels were confined to the safer sort. The diminution of the numbers engaged, the fewer losses, and the less arduous character of the work somewhat lessened the antipathy to submarine service and formed part of an extensive preparation for the great campaign already planned for 1917.

On January 31, 1917, without previous warning, the German government announced its intention to abandon, within certain defined areas, the restrictions imposed by international law, humanity, and the customs of centuries. In the prescribed areas or zones, which included nearly all the waters of Europe except the Baltic and its approaches and the coast of Spain, "all sea traffic forthwith will be opposed." The zones were defined as follows (the published translations not being very clear as regards the limits between the coast of Norway and the Faroe Islands, the assigned lines in this locality may be slightly incorrect):

In the North Sea, the eastern boundary line begins abreast the southwest corner of Holland and runs along the Dutch coast at a distance of 20 nautical miles to the longitude of the Terschelling lightship; thence due north to Utsire I., Norway; thence to a point in lat. 62° N., long. 3° (or 5°) E.; thence along the parallel of 62° to 5° W. long.; thence to a point 3 miles south of the south point of the Faroe Islands; thence to 61° N., 15° W.; thence to 57° N., 20° W.; thence to 47° N., 20° W.; thence to 43° N., 15° W.; thence to the eastward along the parallel of 43° N. to a point 20 miles from Cape Finisterre, Spain; thence eastward at a distance of 20 miles from the Spanish coast until the line reaches the coast of France.

All the Mediterranean was made a barred zone except that portion lying west of a line drawn from a point just to the eastward of Cette (France) to 38° 20′ N., 6° E., and north of a line extending along the Algerian coast (at a distance of 60 miles) from the Morocco frontier to 38° N., 6° E. Between the two geographical points thus defined a lane 20 miles wide extends eastward to Greece. Its limits on the side of the African shore are: 38° N., 6° E. to 38° N., 11° 30′ E.; thence to 34° N., 11° 30′ E.; thence to 34° N., 22° 30′ E.; thence north to Greek territorial waters.

One American vessel per week was to be allowed to pass through the northern zone if the United States government guaranteed that she would carry no contraband, if she arrived on Sundays and sailed on Wednesdays, if she went to Falmouth (England) only, if she kept a course between the Scilly Islands and a point 50° N., 20° W. in going and coming. On February 3, Count von Bernstorff (Ambassador to the United States) announced that as a concession any American ship not carrying contraband could use the Falmouth Lane. As a concession to Holland, the eastern boundary of the North Sea area was moved to the meridian of 4° E.

As already stated, the campaign instituted in accordance with this proclamation was in outrageous violation of international law, the rights of neutrals and noncombatants, and the customs of two centuries of naval war. To acquiesce in the admissibility of such warfare was to destroy international law and national safety.

The United States government, which had been patient beyond all precedent, could no longer permit its rights to be assailed and its citizens murdered. Diplomatic relations were at once broken off and, on April 6, 1917, war was declared against Germany. A large force of destroyers and patrol vessels was sent to Europe, where they arrived on May 4. The effect of this very considerable addition to the Allied submarine flotilla was marked. The increase in the weekly sinkings was at once checked and the numbers began to fall. This reduction was further assisted by other important factors, the chief of which was the arming of Allied merchantmen. Vessels carrying guns and trained crews became so numerous as to cause a revolution in submarine methods.

The attack of large ships by guns was becoming so dangerous to the U-boats that they resorted to the torpedo. This greatly cut down the radius of action of the boats and caused them to return at shorter intervals to their bases. It also threw a severe strain on the German supplies, for a torpedo requires several months to build and adjust. Zigzag steering, the depth bomb, which is dropped on submerged U-boats, and the smoke-box, that can quickly obscure a steamer from the submarine's view, each played its part. The combined results of the various adverse factors gradually diminished the number of large (over 1600 tons) British vessels sunk each month until, in November, 1917, the average was only thirteen per week, while in one week but a single victim of this size was secured. Moreover, the average tonnage of the ships sunk was lessening. This was probably due to the arming of the larger ships and to their better handling.

Beyond question the German naval authorities at the end of 1917 were preparing to meet the new conditions. Their new boats were larger and faster, and were said to have some hull armor and to carry much larger guns than the older craft. An increase in torpedo supply was naturally to be expected and it was quite likely that the new torpedoes would have a greater range. Two defects the new boats must possess, however. Being larger they would be more easily seen, and they could not be built at the same speed and in the same numbers as were the smaller types. From the outlook at the end of 1917 it appeared that whatever measure of success they could attain must be reached in the first six or eight months of 1918, for, at the end of that time, the patrol fleet of destroyers was to be much increased and would be growing in geometrical ratio. Moreover, unless the U-boat campaign surpassed that of 1917 in effectiveness, the rate of ship production largely would exceed the rate of sinking.

According to British semi-official statements, the British tonnage sunk, in February, March, April, and May, 1917, averaged 450,000 tons. In June the figures fell to 320,000; in July, August, and September, to 200,000 per month. In October, November, and December the reduction in the number of vessels sunk still continued and it was presumed that the tonnage destroyed was no greater—perhaps less—than in the summer. The total thus indicated is 3,320,000. The losses of the other Allies (including the United States) brought the grand total for 1917 (excluding January) to approximately 4,000,000. If the losses for the first half of 1918 should have the same monthly rate as the average of 1917, the total losses for all the Allies between February 1, 1917, and July 1, 1918, would be about 6,200,000. The shipbuilding and accessions of tonnage (German and Austrian ships) during the same interval should be: United States—2,400,000 tons commandeered while building; 1,650,000 tons of new ships completed; 700,000 tons German and Austrian ships seized; 250,000 tons transferred from Lakes and other trades—total, 5,000,000 tons; Great Britain—at least 2,500,000; France—300,000; Italy—200,000; Japan—500,000. Grand total of Allies, 8,500,000; excess of ships completed, February 1, 1917, to July 1, 1918, over those sunk in the same interval, 2,300,000 tons.

If the German sinkings do not rise above the level of the last half of 1917, the excess would be over 3,000,000 tons. While it was probable that the new German submarine fleet would be stronger than ever, it would have to meet the enlarged and constantly growing force of destroyers and large patrol vessels. In estimating the total of the United States it was presumed that none of the new steel vessels of the Emergency Fleet Corporation would be finished on July 1, and that 400,000 tons of commandeered shipping would still be under way. The losses of merchant vessels from striking mines are not included, but the number of ships so destroyed in 1917 was almost negligible, amounting apparently to about 5 per cent of all the ships lost.

The losses of neutrals were not considered in the foregoing discussion, as the available figures were insufficient to warrant review. Norway was the heaviest sufferer, having been despoiled of more than 1,200,000 tons by mine and submarine since July, 1914. Greece and Holland each lost about 200,000 tons; Denmark, 150,000; Sweden, 125,000; Spain, 75,000; and the United States had lost 60,000 before she declared war. Having inadequate shipbuilding facilities of their own, neutrals were replacing but a small part of their losses, and the rate of sinking must decrease from lack of ships to sink. Moreover, many of their weaker and more vulnerable vessels had become engaged in less remunerative but safer trade, far from the scenes of submarine activity, in regions from which Allied ships had been withdrawn by the exigencies of war. See accompanying tables; BATTLESHIPS, ETC.; NAVAL PROGRESS; UNITED STATES AND THE WAR.

TABLE SHOWING THE NUMBER OF BRITISH MERCHANT SHIPS SUNK EACH WEEK BY GERMAN SUBMARINES AND MINES FROM FEB. 1 TO DEC. 23, 1917.

Week Ending		*Over 1,600 Tons*	*Under 1,600 Tons*	*Week Ending*		*Over 1,600 Tons*	*Under 1,600 Tons*
(Feb. 1 to 18)		47	15	Aug.	5......	19	2
Feb.	25......	15	6	"	12......	13	1
Mar.	4......	14	9	"	19......	15	3
"	11......	13	4	"	26......	18	5
"	18......	16	8	Sept.	2......	20	3
"	25......	18	7	"	9......	12	6
Apr.	1......	18	13	"	16......	8	20
"	8......	17	2	"	23......	13	2
"	15......	19	9	"	30......	11	2
"	22......	40	15	Oct.	7......	14	2
"	29......	38	18	"	14......	12	6
May	6......	24	22	"	21......	..	..
"	13......	18	5	"	28......	14	4
"	20......	18	9	Nov.	4......	8	4
"	27......	18	1	"	11......	1	5
June	3......	15	8	"	18......	10	7
"	10......	22	10	"	25......	13	7
"	17......	27	5	Dec.	2......	16	1
"	24......	21	7	"	9......	14	7
July	1......	15	5	"	16......	14	3
"	8......	14	3	"	23......	11	1
"	15......	14	4				
"	22......	21	3				
"	29......	18	8				

AVERAGE NUMBER OF BRITISH MERCHANTMEN SUNK PER WEEK BY ENEMY SUBMARINES IN EACH MONTH OF 1917; ALSO THE HIGHEST NUMBER SUNK IN ANY WEEK OF EACH MONTH.

Month	*Average Weekly Sinkings*	*Highest Number in any Week*	*Month*	*Average Weekly Sinkings*	*Highest Number in any Week*
February ...	16	..	August	16.2	19
March	15.2	18	September ..	12.8	20
April	26.4	40	October	13.3	14
May	19.5	24	November ...	8.0	13
June	20.0	27	December ...	13.8	16
July	16.8	21	For the year	16.6	40

SUBMARINES. At the end of 1917, half the German submarines were believed to be of about 1000 tons submerged displacement. The other half was made up of boats of 500 to 800 tons, mine-layers of small size, boats of 1200 tons carrying three 3.46-inch guns or two 4.1-inch, and somewhat larger boats carrying two 5-inch. Still larger ones, fitted with 6-inch guns, were reported; and a shell fired by a German destroyer at a town in the Azores was said to have been of 6-inch calibre, but the statement lacked confirmation. In 1916, boats of 2400 tons were thought to be building in Germany, but in 1917 they had not appeared where they could be recognized. Judging from boats in service since, Germany had at that time fixed on a displacement of about 1000 tons as a size large enough to give the speed, armament, radius of action, and habitability required. It is always desirable to keep the dimensions as small as practicable, as large boats cost more money than small ones—both to build and to run; they take longer to build, require larger crews, take longer to submerge and emerge, are less easy to manœuvre, and are more likely to be seen by their enemies. Guns of 2.95 or 3.46 inches calibre were carried, the larger size being considered a trifle heavy. Improved machinery had increased the speed. All this supposd perfection was thrown away by the general arming of merchant ships, for submarines were opposed to guns of five and six inch calibre. Destroying ships by gunfire became less and less frequent and many attacking submarines were sunk by merchantmen. Two courses remained open. The submarines could use torpedoes only; or a larger type could be built which would carry heavier guns and some armor protection over the hull. Germany was unprepared for a torpedo campaign, but she had, temporarily at least, been forced to pursue it; but if the reports of large submarines were correct she intended to come back to gunfire as far and as soon as practicable. Moreover, the large guns might give the submarine a chance with the destroyer under favoring conditions.

During the year Great Britain and the United States were building several submarines of 1500 to 2000 tons and one or more British boats of this size had been completed, though the great majority were of 500 to 1200 tons. During 1917 the United States navy laid down a large number of coastal destroyers of about 800 tons, a size that was considered suitable for ordinary defensive operations. See SUBMARINE OPERATIONS; NAVAL PROGRESS.

SUDAN, ANGLO-EGYPTIAN. An African country situated between Egypt and Uganda, and bordering Abyssinia on the east and the northern part of French Equatorial Africa on the west. The capital is Khartum. The Anglo-Egyptian Sudan came under the joint British and Egyptian administrations in virtue of a convention signed January 19, 1899. The area of the country is stated at 984,520 square miles. The population is roughly estimated at between three and four millions. The principal towns include Khartum (with 23,083 inhabitants in 1916), Omdurman, the old Dervish capital (59,429), Khartum North (15,973), El Obeid, Halfa, Meorë, Port Sudan, Suakin, etc.

The Sudan produces cotton, dates, sesame, vegetable ivory, senna, rubber, ground nuts, gums, hides and skins, ivory, and ostrich feathers. It is the chief source of the world's supply of gum arabic. Extensive irrigation plans have been carried out. The reported values of imports and exports in 1915 are £1,704,250 (including government stores) and £1,577,991 respectively.

The Nile and its tributaries afford steamer communication. There is a railway from the Egyptian frontier at Wadi Halfa to Khartum. A branch to the Red Sea at Port Sudan was opened in 1905, and a branch to Sennar and El Obeid in 1912. The total mileage is about 1500. For the year ending December 31, 1916, a gross revenue of £E.824,957, in comparison with £E.592,683 in 1915, was reported. The expenditures increased from £E.382,204 in 1915 to £E.522,204 in 1916, the cost of coal in particular being £E.182,688, against £E.74,764. The acting governor-general in 1917 was Col. L. O. F. Stack. The country is divided into fourteen provinces administered by governors.

SUGAR. The outlook for the total sugar crops of the world for the season 1917-18, according to the estimates of Willett and Gray, was for a production of 16,770,250 tons, an increase of nearly 188,000 tons over the season 1916-17. These crops were as usual largely prospective, since the harvest period in most of the large cane producing countries does not begin until October and in the Tropics extends several months over into the following year. The estimate for cane sugar was placed at 12,033,750 tons, as compared with 11,268,849 tons in 1916-17 and 10,684,997 tons in 1915-16. the beet sugar crop, on the other hand, showed a falling off from 5,077,760 tons in 1915 and 4,566,408 tons in 1916, to 3,849,000 tons in 1917. This was due to so much of the beet sugar area in Europe being involved in the war. In the United States the beet sugar crop was estimated at 875,000 tons, an increase over 1916 of more than 140,000 tons.

The Louisiana and Hawaiian crops of cane sugar, estimated at 225,000 and 525,000 tons respectively, were somewhat below the previous year, but the Porto Rican crop of 475,000 tons was higher than in 1916, and the Cuban crop was apparently equal to the record crop of 1916, or over 3,000,000 tons. The estimated production in the other leading countries was as follows:

British West Indies, 190,000; French West Indies, 80,000; San Domingo, 145,000; Mexico, 35,000; Central America, 25,000; Demerara (exports), 120,000; Peru, 265,000; Argentina, 150,000; Brazil, 375,000; British India, 2,750,000 (consumed locally); Java, 1,800,000; Formosa and Japan, 450,000; Philippines (exports), 271,250; Australia, 265,000; Fiji Islands (exports), 100,000; Egypt, 100,000 (consumed locally); Mauritius, 224,000; other African countries, 210,000; and Spain, 6000 tons.

In the fall of 1917 the United States faced an actual sugar shortage, much difficulty being experienced in procuring household supplies. For the first time sugar appeared on the menus of some hotels as an extra, for which a special charge was made. The action of the Food Administration, however, served to keep down the price and to regulate the supply. The shortage was attributed quite largely to the fact that foreign governments through their extensive purchases in the United States had reduced the reserve supply of last year to a narrow margin. The difficulty was accentuated by consumer hoarding and by the abnormal amounts of sugar used in the home canning campaigns conducted extensively over the country.

The sugar export of the United States had increased enormously since the war began. It reached its height in 1916, but in 1917 it amounted to 1,254,551,280 pounds, or eighteen times as much refined sugar as in any year before the war. In 1916, 70 per cent of all the sugar exported to the Allies went to England, but in 1917 62 per cent of these exports was taken by France. South America, which prior to the war purchased 1,000,000 pounds from the United States, took 142,858,818 pounds in 1917.

The International Sugar Committee was formed early in the fall of the year to arrange for the distribution of the available sugar in the world. Two members were appointed by the Allied governments and two by the United States Food Administration, which was also represented on the committee by the head of the sugar division. It was the duty of this committee to arrange for the purchase and distribution of all sugar, whether for the United States or the Allied countries. This committee passed upon the export of sugar, and the importation of this commodity into the United States was placed under license of the War Trade Board by executive order the last of November.

In December the United States Senate directed an inquiry into the causes of the shortage of sugar, which was in progress at the close of the year.

The consumption of sugar in Europe had been greatly reduced. England, which formerly used 93½ pounds per capita annually, had cut the amount to 26 lbs., while France and Italy had reduced the amount to 18 and 12 pounds respectively. In the United States as high as 90 pounds a head per year had been used, but the amount fell under high prices and regulation of that used by confectioners. The Food Administration proposed a reduction to 67 pounds per capita annually. It was stated that two-fifths of all the sugar consumed in the United States was used in candy.

At the close of 1916 it was announced that the government of Panama was authorized to loan a half million dollars to sugar plantation operators or to guarantee loans to that amount, these loans to be repaid within ten years. A subsidy was granted of half a cent per kilogram of white granulated sugar produced in that country. Great Britain made a grant of $625,000 from its Development Fund as a loan for the development of sugar-beet growing and manufacture in England. See Chemistry, Industrial; Food and Nutrition; Food Control.

SUN. See Astronomy.

SUNDAY SCHOOL UNION, American. A voluntary association of Christians of different denominations, established to teach fundamental Christian truth, especially to the young. It was founded in Philadelphia in 1791 under the name of the First Day Society, but its present title was assumed in 1824. Its practical purpose is to found Sunday schools and to circulate Bibles, New Testaments, and other religious literature. During the fiscal year ending March 1, 1917, the American Sunday-School Union commissioned 255 missionaries, established 1313 new Sunday schools, and reorganized 694, and into all these schools were gathered 6952 teachers and 65,608 scholars. In addition to their pioneer work, the missionaries have visited 14,394 schools in which 72,949 teachers and 879,082 scholars have been influenced; and while thus engaged they distributed 7063 Bibles and 19,096 New Testaments. The combined circulation of nine different Sunday school periodicals in 1917 was 2,149,231. Out of the Union Sunday schools in 1917 there have grown 86 churches of various denominations; 405 Young People's Societies and Prayer Meetings have been established, and 7794 conversions reported. The centenary celebration of the beginning of organized Sunday school work in America, was held in May, 1917. The officers in 1917 were: President, Martin J. Finckel; secretary of missions, G. P. Williams; financial secretary, E. P. Bancroft; treasurer, J. E. Stevenson. The chief offices are in Philadelphia.

SUNSET DIVISION. See Military Progress.

SUN SPOTS. See Astronomy.

SUPERHEATER. See Railways.

SURGERY. See Military Surgery.

SWARTHMORE COLLEGE. A non-sectarian co-educational institution located at Swarthmore, Pa. It was founded in 1864 by the Society of Friends (Quakers). In the fall of 1917 there were 484 students and 49 members of the faculty. Volumes in the library numbered 35,000. Walter Dennison, professor of Greek and Latin, died in 1917. Addition was made to the endowment of $375,000 and $50,000 was added to the Women's Dormitory Fund. President, Joseph Swain, LL.D.

SWAZILAND. A British protectorate in South Africa, situated at the southeast corner of the Transvaal and north of Zululand. Area, 6536 square miles. Population (estimate of March 31, 1914), 107,117. The staple product is corn; other crops are tobacco, millet, ground nuts, sweet potatoes, and beans. There are about 73,000 cattle, 170,000 native sheep, and 9000 swine. Tin and gold are mined. The tin output in 1915-16 was 584 tons valued at £56,067; gold, 6497 ounces, £29,595. Swaziland is included in the customs territory of the Union of South Africa, and separate trade returns are not shown. Administrative headquarters, Mbabane. Paramount chief, Sobhuza (regent, his grandmother, Nabotsibeni).

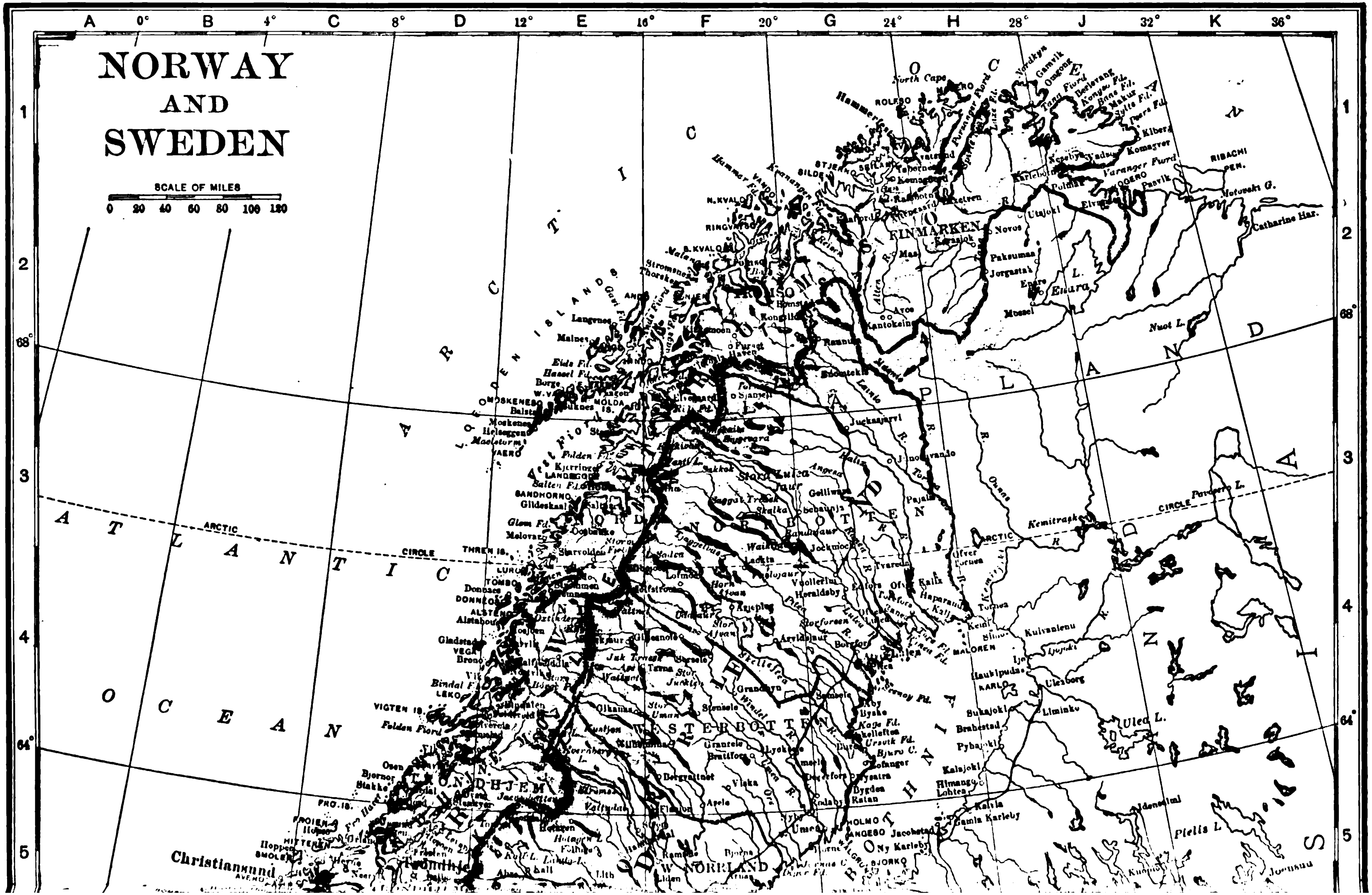
SWEDEN. The kingdom of Sweden occupies the largest (eastern) division of the Scandinavian Peninsula, in the northwestern part of Europe. The land boundaries are those dividing it from Norway and Finland. The Gulf of Bothnia, the Baltic Sea, the Sound, the Kattegat, and the Skager-Rak from the eastern, southern, and part of the western boundaries. Although 15 per cent of the area lies north of the Arctic Circle, the rigors of a northern climate are ameliorated by the warmth of seas affected by the Gulf Stream.

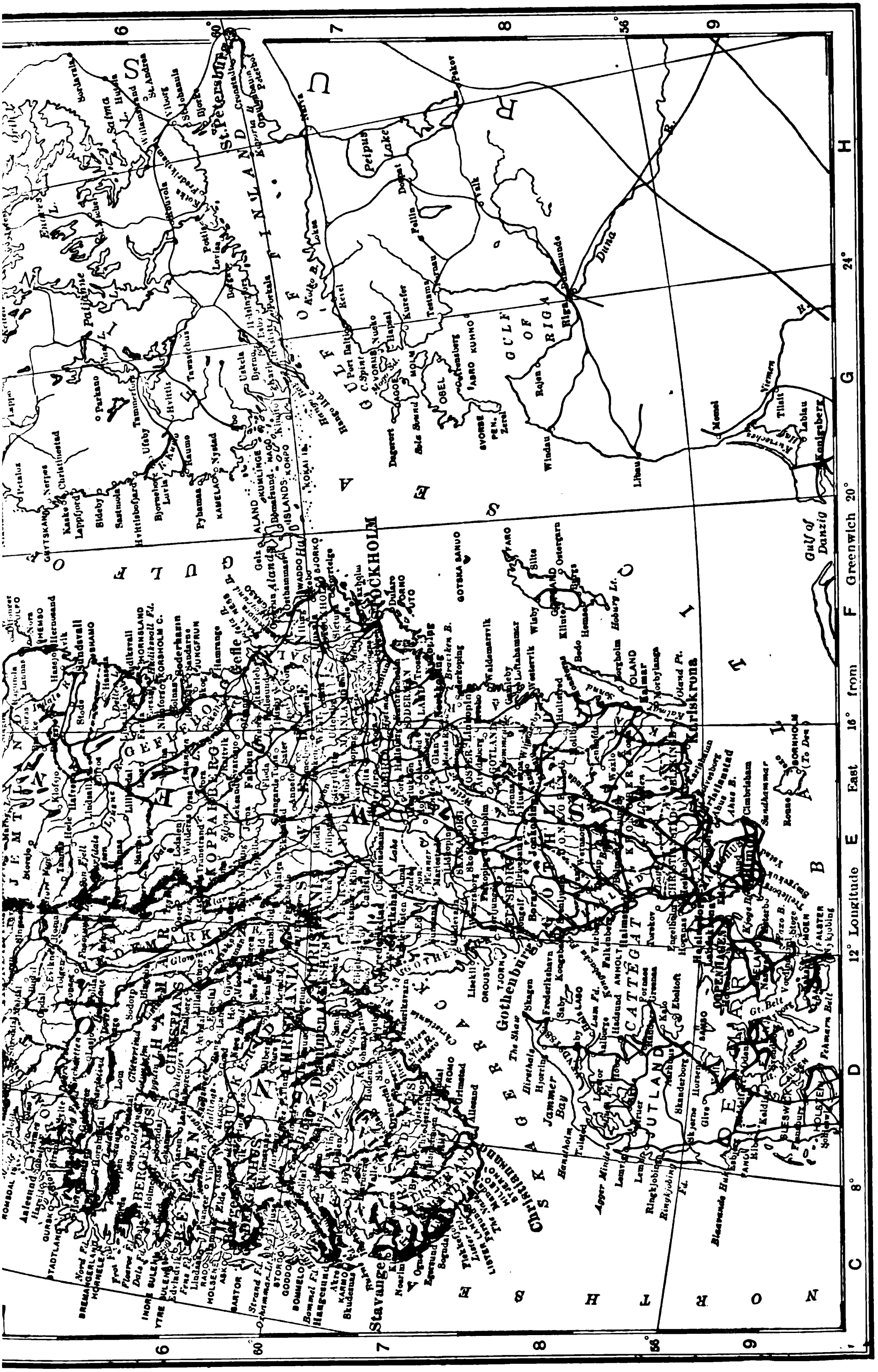
Toward the European war, Sweden's attitude was that of a neutral, though the reigning family and many among the nobility exhibited pro-German leanings.

Area and Population. The population is, in the northern regions, thinly scattered. The people belong to the Germanic branch of the Aryan family. The land area in square kilometres is 410,353.6 and the population on January 1, 1915, 5,679,607.

The population of Stockholm City as calculated December 31, 1916, was 408,792; of Stockholm prefecture, 225,731. The total population of Sweden was calculated on that date at 5,757,566—a density of 33.3 to the square mile.

NORWAY AND SWEDEN




12° Longitude East 16° from Greenwich 20° 24°
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56°
60°
GULF OF FINLAND
GULF OF RIGA
GULF OF BOTHNIA
BALTIC SEA
SKAGER RACK
CATTEGAT
NORTH SEA
Gulf of Danzig
STOCKHOLM
St. Petersburg
Christiania
Gothenburg
Copenhagen
Stavanger
Christiansand
Bergen
Riga
Reval
Memel
Königsberg
Libau
Windau
Karlskrona
Helsingfors
Abo
Gefle
Sundsvall
Peipus Lake
Dorpat
Duna
JUTLAND
SLESWICK
HOLSTEIN
Jammer Bay
The Skaw
Bornholm
Gotland
Oland
Osel
Dago
Aland Is.
Wisby
Kalmar
FINLAND
RUSSIA

Density in Stockholm (city), 7.713; in Malmöhus, the prefecture showing greatest density, 256.3; in Norrbotten (the least), 4.3. Males (1916) numbered 2,817,950; females, 2,939,616.

Total births are given provisionally for 1916 at 121,214; deaths, 77,683; marriages, 35,156.

Besides Stockholm, the principal cities are Göteborg, with a population at end of 1916 of 191,535; Malmö, 111,823; Norrköping, 55,623; Gävle, 36,623; Hälsingborg, 35,783; Orebro, 34,453; Eskilstuna, 30,111; Karlskrona, 28,556; Jönköping, 28,765; Upsala, 27,976.

The urban population is calculated at 26 per cent of the whole—a low rate as compared to the rest of Europe. The capital, Stockholm, is the principal import town as well as the home of a majority of the principal manufacturing interests.

Social Conditions. The question of nation-wide prohibition of the manufacture and sale of intoxicants had reached Sweden and the need for radical measures was realized. The total amount of spirits consumed in 1912-13 was 387,289 liters (at 50 per cent), or 6.7 liters per inhabitant; of beer 1,156,391 liters, or 20.6 liters per inhabitant. Sentenced for drunkenness in 1911-12, 56,622. This figure does not include those sentenced for crimes whose commission was directly or indirectly traceable to drunkenness. The Royal Temperance Committee issued proposals in 1914 for radical reforms, which failed of adoption in the legislature; but the question of restriction of manufacture and sale continues to be agitated.

The movement for woman's suffrage advances in Sweden, as in most other civilized countries. The Swedish National Woman Suffrage Union now numbers 213 local associations, with 17,000 members. This and kindred associations have a total membership of 35,000.

Education. The public elementary schools are parish institutions, with grants-in-aid from the state. The compulsory period is 7 to 14; but children who at 14 have not attained the required standard are obliged to continue beyond that age. Elementary schools in 1914 numbered 15,773, with 23,495 teachers and 813,433 scholars. State expenditure for the year, 13,476,454 kronor, out of a total of 50,645,795 kronor. Secondary (public) schools (1915), 77, with 24,828 pupils; people's high schools, 48, with 2704; normal schools, 15, with 1953.

Agriculture. Not a large proportion of the soil of Sweden is favorable to cultivation; and the climate, with its short growing period and early frosts, makes the harvest precarious. It is estimated that 12 per cent only of the area is under crops and meadows; yet upon that 12 per cent, according to the census of 1910, 2,663,000, or 48.23 per cent of the population, exists, as against 2,756,704, or 53.67 per cent in 1900, and 2,995,844, or 71.87 per cent in 1870.

The forest lands constitute one of the greatest sources of the country's wealth, the export of timber being nearly half the total exports. Instead of exporting grain, Sweden imports it in increasing quantities.

In view of the shortage in food supplies, a comparison of ante-war live stock conditions with those of subsequent years is of interest. The very high prices of cattle, from the opening of the war, encouraged breeding. The census of June 1, 1916, given in detail herewith, shows that the number of cattle, especially those of young stock, has not only been maintained, but even increased. Oxen, bulls, and cows are the only classes showing any reduction in number for 1916, as compared with 1913.

	June 1, 1916	*Dec. 31, 1914*	*Dec. 31, 1913*
Horses over 3 years..	523,128	501.370	497,243
Horses under 3 years	177,971	101,243	98,893
Oxen	76,805	134,000	130,000
Bulls	44,437	51,466	51,323
Cows	1,769,689	1,845,989	1,841,991
Young stock	1,022,228	729,333	688,427
Sheep	1,198,369	998,481	988,163
Goats	131,788	77,174	71,054
Pigs	1,065,396	1,014,683	967,684

Commerce. The average annual value of the trade for periods cited, with the figures for 1914 and 1915, are given below, in thousands of kronor:

	1836-40	*1876-80*	*1906-10*	*1914*	*1915*
Imports ..	27,216	268,506	644,740	726,908	1,142,505
Exports .	29,887	209,856	515,362	772,355	1,316,864

The principal classes of imports and exports in the 1915 trade, with values in kronor, are given as follows:

	Imports	*Exports*
Textile mfrs.	62,772,523	37,745,233
Cereals and flour.......	133,187,548	906,339
Colonial wares	61,381,180	19,112,605
Raw textile materials and yarn	180,310,543	104,111.342
Minerals	196,086,559	105,899,685
Metal goods, machinery, etc.	83,470,748	156,085,097
Live animals and animal food	87,892,277	182,874,374
Hair, hides, etc........	67,859,567	28,341,375
Metals, raw and partly wrought	84,747,799	136,040,244
Timber, wrought and unwrought	8,485,318	235,597,883
Wood pulp, paper, and mfrs.	5,888,492	164,129,024
Various	220,422,411	145,521,198
Total..............	1,142,504,965	1,316,364,399

No figures for trade by countries of origin and destination are available for years later than 1914, the preponderance for that year being with the German and British empires.

Swedish exports to the German empire have generally included unwrought timber goods, joinery, paper and paper pulp, stone, iron-ore, bar-iron, other descriptions of iron and steel, herrings, separators, meat, milk and cream, hides, etc. The imports included coffee, tobacco, wheat, rye, oats, seed, wool, paints and dyes, cotton, woolen goods, silk goods, articles of dress, hides, fertilizers, iron and steel, machinery, copper, etc.

Germany, with which country commercial intercourse has been very brisk ever since the days of the Hansa League, has its chief importance for Sweden in the considerable import thence of articles of food and consumption (the greater part of the import of wheat, a considerable part of the import of rye, and the greater part of the import of coffee and tobacco), of raw materials for textile industries, and of a multitude of industrial products.

Communications. At the end of 1913 Sweden had about 14,377 kilometres of railways in operation, with 2200 under construction or conceded. Of this length, 4688 kilometres were state railways. An English source gives the total mileage at the end of 1915 as 9228; the length of telegraph lines as 40,821 miles; state telephone lines, 226,689; private lines, 117,879. Navigable waterways and canals form an important means of internal communication. The company-owned Swedish railways showed an increase in receipts for the first six months of 1917, as compared with the same period in 1916, of 18.4 per cent on the freight traffic and 9.5 per cent on the passenger traffic. The increase in the freight receipts is exclusively due to the higher tariff temporarily adopted. The private railways contemplated a material reduction in the number of trains during the winter, while the state railways meant to meet the shortage of fuel problem by reducing the speed. During 1917 a further increase of 50 per cent on goods traffic was proposed, making the increase since the beginning of the war 100 per cent.

Finance. The financial administration of Sweden presents the peculiarity of being divided between two mutually independent institutions—namely, the public treasury, under the management of the government, with the exchequer (Statskontoret) as its organ; and the national debt under the control of the Riksdag, with the national debt board (Riksgäldskontoret) as its organ.

The budget reform of 1911 effected the formal unification of the financial administration by providing that almost every branch of revenue and expenditure was to be included in the national budget. Side by side with its chief functions of directing a loan policy of the country, managing the national debt, and acting as the financial organ of the Riksdag, however, the national debt board still sees to the disbursement of borrowed monies and also manages a part of the state's loan-funds. Budget estimates for 1917: Total revenue, 446,995,100 kr.; total expenditure, 446,995,100 kr. During 1914 all the independent tobacco industries in Sweden, together with the so-called tobacco trusts, were consolidated into one régie and taken over by the government. The debt stood January 1, 1916, at 812,608,666 kr. See Financial Review.

Navy. The Swedish fleet consists at present of the following ships: The royal yacht, the *Drott*, 630 tons. War vessels: 12 ironclads (the *Svea*, *Göta*, *Thule*, *Oden*, *Thor*, *Niord*, *Dristigheten*, *Aaron*, *Vasa Tapperheten*, *Manligheten*, and *Oscar II*), each of from 3270 to 4660 tons, and the *Sverige*, of 6800 tons; 1 armored cruiser of 4800 tons; 3 second-class ironclads of 1500 tons; 7 third-class ironclads of 460 tons; 5 torpedo cruisers of 840 tons; 4 gunboats of from 400 to 600 tons; 8 destroyers of 450 tons; 31 first-class torpedo boats of from 70 to 120 tons; 22 second-class torpedo boats of from 43 to 86 tons; 2 mining vessels and a number of submarines. Further, training ships, wireless telegraphy ships, work ships, hospital ships, depot ships, and receiving ships, etc., altogether 20, most of them older ships, revamped for their special purposes.

The total tonnage of the warships of the fleet is about 80,000. The number of guns mounted on the warships are somewhat over 500, of which 25 heavy, 132 medium heavy, and the remainder light guns. The total of the indicated horsepower of the warships is about 250,000.

The coast artillery in the widest sense of the term includes the coast fortresses and positions, namely, Vaxholm and Oscar Fredriksborg forts, Karlskrona forts, Älvsborg fort, and the coast positions of Fårösund and Hörningsholm, with all the fortification works, guns, mines, torpedoes, watch-towers, and other material, together with the naval and military personnel belonging to them.

Government. Government measures are decided upon by the king-in-cabinet. The several ministers, on the other hand, cannot decide even minor matters by themselves.

King Gustaf V is the fifth sovereign of the house of Ponto Corvo and great-grandson of Marshall Bernadotte, prince of Ponte Corvo, who was elected heir-apparent of the crown of Sweden by the parliament of the kingdom, August 21, 1810, and ascended the throne February 5, 1818, under the name of Carl (XIV) Johan. He was succeeded at his death, March 8, 1844, by his only son Oscar. The latter died July 8, 1859, and was succeeded by his eldest son, Carl XV, at whose premature death without male children, the crown fell to his next surviving brother, the late King Oscar II, father of the present sovereign.

Gustav V was born June 16, 1858; he married September 20, 1881, Princess Victoria of Baden, and succeeded his father to the throne December 8, 1907. The heir-apparent is Prince Gustaf Adolf, born November 11, 1882, married June 15, 1905, to Princess Margaret of Great Britain and Ireland. The Swedish Cabinet, which began service October 19, 1917, was made up as follows: Prime Minister, Nils Edén; Minister for Foreign Affairs, J. Hellnar; Justice, Eliel Lövgren; Navy, E. K. (Baron) Palmstierna; War, E. A. Nilson; Finance, Hj. Branting; Interior, P. A. V. Schotte; Instruction, K. V. Rydén; Agriculture, Alfred Petterson; Without Portfolios, B. Petrén, Ö. Undén.

History

Relation to the War. In reply to the suggestion of the United States government that other neutral countries should follow its example in breaking off relations with Germany after the renewal of the submarine war, the Swedish government declared that that method was entirely contrary to its principles of policy. On February 14 it was announced that the Scandinavian powers after a consultation lasting a week at Stockholm, had handed an identical note to the German ministers in Denmark, Norway, and Sweden, protesting against the submarine blockade, refusing to admit its legality, and holding Germany accountable for damages.

Cabinet Crises. The government having introduced a measure for the appropriation for 30,000,000 crowns to preserve Sweden's neutrality, the upper chamber voted for it by a small majority, and the second chamber voted against it by a considerable majority; thus the government lost its measure and the Ministry resigned on March 5. The king accepted the resignation of the whole Cabinet under the prime ministry of Hammarskjöld and a new Ministry was formed by Carl J. G. Swartz on March 29. The new prime minister was a conservative in politics and had been minister of finance in the Lindman Cabinet from 1906 to 1911 and was chairman of the budget committee at the time of his appointment. In the new Ministry, Col.

Akerman, who was regarded as one of the ablest of Sweden's military officers, was minister of war. In April the economic condition seemed to be very serious. While the Parliament was in session in Stockholm on April 21, a crowd of workmen numbering several thousand gathered before the building to express their demand that exports be stopped and that foodstuffs be better distributed. Hunger demonstrations were reported at several points in the country. Many people demanded an immediate commercial agreement with Great Britain. The prime minister at the time of this gathering of workmen had just finished a speech on the food situation. In June, 1917, many disorders were reported on account of the scarcity of food. At Stockholm, for example, bands of women went to the retail shops to see whether the provisions were concealed in the cellars; at Gothenburg bake-shops were pillaged; at Norrkoeping 5000 women demanded bread of the mayor and city authorities and in spite of all efforts to calm them they pillaged a number of the bake-shops. It appeared from investigation afterwards that many of them had been unable to obtain bread for two days. In southern Sweden bands of workingmen were reported to be roaming over the country from farm to farm and compelling the farmers to give up their reserve supplies and the peasants were arming themselves to resist these attacks. Moreover, it was said that the army in many places was taking part in Socialist demonstrations. At Stockholm, for example, soldiers in the engineer corps disobeyed orders and attended meetings and the same thing happened among the sailors of the fleet. Among the Socialists the queen was especially unpopular. They called her the German Queen of Sweden, and she was accused of causing provisions to be smuggled into Germany. Many papers contained bitter attacks on the German submarine policy, including some that were regarded as pro-German. On all sides the opinion was expressed that Germany had become totally indifferent to the sympathies of the outside world. The torpedoing of three Swedish vessels seemed to have completely turned around opinion and the policy of Sweden towards Germany.

Change of Ministry. In September the government was defeated in the elections and it was necessary to choose a successor to the Swartz Ministry. The personnel of the new government formed on October 19 are given above under *Government*. Upon the nomination of the Cabinet the prime minister issued a statement, of which the main points were as follows: The main task was to maintain strict neutrality as heretofore and absolute impartiality between belligerents. Sweden must continue to develop the collaboration which during the war has been established between the three Scandinavian Powers. The question of reducing national defense must be postponed till after the war, but must then be thoroughly considered. Every effort must be made to take advantage to the extreme of the resources of the country, to encourage and develop production, especially of foodstuffs of prime importance, to smooth the conflicting interests of producers and consumers, and finally to maintain to the largest extent possible the commercial relations with foreign countries.

"The severe times which our people have recently experienced have proven very clearly the necessity of trying to unite all forces of the nation in a common effort for the well-being of the country through a truly democratic policy in every respect of social life. At the recent election to the second chamber of the Riksdag a great majority has expressed itself favorable to several constitutional reforms, in the first place those which purpose to base the municipal elections on the equal right to vote for every person who pays municipal taxes, further to extend the right of political votes to women, on the same conditions as to men, and, finally, to revise certain regulations of the election law which, at present, restrict the right of voting."

Sweden and Finland. At the close of the year there was much discussion in the Swedish press of the policy to be followed toward the "new republic of Finland." The Finns had hoped for immediate recognition. In general the Swedish press was friendly, especially the pro-German papers, which since the war broke out had repeatedly urged the separation of Finland from Russia; but in Finland there was suspicion of Swedish designs on the Aland Islands. The "activist" element had been much concerned lest the Aland group, which was nearer to the Swedish coast than to the Finnish and might serve as a base of operations against Stockholm, might become a sort of Heligoland. One of the arguments of those who favored entry into the war on the side of Germany was that in the event of a separate peace between Russia and Germany the latter might get control of Aland. After the collapse of Russia, some even suggested the occupation of the islands by force. This was resented in the Finnish press, which declared that Aland should never be given up.

SWEDENBORGIANS. See Church of the New Jerusalem.

SWEDISH LITERATURE. See Scandinavian Literature.

SWIMMING. The year 1917 was a banner one for swimming, record after record being shattered by both the men and women adherents of the sport. Norman Ross, a young swimmer of the Olympic Club, San Francisco, headed the list of star performers. Among the new marks he established were: 220-yards, 75-foot pool, 2:22⅕; 440 yards, 5:16⅕; 500-yards, 6:05⅕. Duke Kahanamoku of Honolulu added to his fame as a sprinter during the year by swimming 100 yards in 53 seconds.

Of the new records created by women the most important were the covering of 50 yards in 29⅘ seconds and 100 yards in 1 minute, 7⅘ seconds by Miss Dorothy Burns of Los Angeles, Cal., and the doing of 500 yards in 7 minutes, 31⅗ seconds by Miss Claire Galligan of New York City.

The best achievement in long distance swimming was accomplished by Joseph Gunther of Charleston, W. Va., who covered 27¼ miles in still water in 16 hours, 12 minutes. Miss Lucy Freeman of New York City won the long distance laurels among the women by swimming the 15 miles from Spuyten Duyvil to the Battery, New York City, in 3 hours, 59 seconds.

No intercollegiate championships were held, but the Yale team was generally regarded as the strongest college aggregation in the country in swimming, while Princeton had the leading water polo team. The Illinois A. C. for the third successive year proved itself supreme in water polo, defeating the New York A. C. team in the final game of the championship series by a score of 36 to 33.

SWITZERLAND. A federal republic of central Europe. It is the most mountainous country in Europe, having the Alps, covered with perennial snow and glaciers, rising from 5000 to 15,213 feet in height, not only along its southern and eastern frontiers, but throughout the chief part of its interior; and the Jura Mountains in the northwest. The capital is Berne.

AREA AND POPULATION. Total area, 41,323,399 square kilometres; *de jure* population (census) of the 25 cantons and demicantons, 3,753,293, and as calculated by the Federal Statistical Bureau for the middle of the year 1915, 3,880,500. Speaking German as their native tongue were 2,599,194; French, 796,220; Italian, 301,323; Romansh, 39,912; other languages, 28,172. Marriages, 1915, 19,527; births, 75,545; deaths, 51,524; stillbirths, 2386. In the same year 1976 Swiss citizens emigrated (1464 in 1916). The communal population of the principal cities will be found in the 191[illegible] YEAR BOOK.

PRODUCTION AND SUPPLIES. On January 9, 1915, the Federal monopoly was established for the importation and sale, through the Federal War Commissary, of all grain, including corn and milling products, such as bran, etc., and composition stock feeds. The monopoly's fixed prices gradually rose after December 31, 1915, those established by decree of the Federal Military Department on February 23, 1917, being (per 100 kilos) as follows: Wheat and rye, $10.81; oats and barley, $8.11; corn, $7.72; oat flakes, $17.37; flour, $12.59; bran, $5.40. The Federal Council forbade the grinding of grain into any but whole-wheat flour, for which an official standard was established. The production of white flour and groats (farina) was forbidden, and the stocks were confiscated by the military department. Later the production of a limited quantity of groats was permitted. A monopoly providing for the purchase, importation, and sale through the Federal War Commissary in Berne of rice and its milling products was established. The Federal Council granted on July 27, 1915, to the Association of Swiss Cheese Export Firms, the exclusive right to issue permits for the exportation of cheese. In order to assure the reservation of sufficient milk at a moderate price for general consumption, the council authorized the Federal Economics Department to discontinue the industrial consumption of milk in plants for whose products there existed no actual necessity. In order also to conserve for home consumption the stocks of industrial materials and food supplies fifteen decrees were issued extending the export embargoes. It was decreed that inventories of the supplies of staple articles in Switzerland should be made.

About one-sixth of the area of the country is forest. The area under main crops and yield for two years are shown below:

	Hectares		*Quintals*	
	1917	*1916*	*1917*	*1916*
Wheat	56,099	50,100	1,240,000	1,040,000
Rye	22,351	28,900	445,000	508,000
Barley	7,679	7,100	155,000	135,000
Oats	28,528	41,800	668,000	979,000
Corn	1,972	1,500	64,000	38,500
Vines *	20,500	21,100	......	430,000
Tobacco	223	200	4,000	3,800
Potatoes	56,750	54,500	9,900,000	5,000,000

* Yield in hectolitres of wine.

Neither the climate nor the soil is favorable to agriculture. Final results of the Federal census of live stock on April 19, 1916, as compared with those of the census of April 21, 1911, were:

	1916	*1911*	*Difference*
Horses	136,618	144,128	7,515
Mules	3,078	3,151	73
Asses	1,275	1,566	291
Cattle *	1,615,645	1,443,483	172,162
Sheep	171,635	161,414	10,221
Goats	358,093	341,296	16,797
Pigs	544,021	570,226	26,205

* Cows 1916, 848,652; 1911, 796,909.

The price of oxen bought at a recent sale (1917) ranged from $140 to $480 the pair; bulls were sold for $160 to $180 each; cows, $240 to $280 each; young cows, $160 to $200 each; goats, $12 to $16 each; small pigs, $12 to $16 each; medium sized pigs, $40 to $60 the pair; fat pigs, 32 cents per pound; sheep, $12 to $16 each.

The country was organized so efficiently to meet war conditions that its manufacturing industries generally had in 1916 maintained or increased the volume of production in comparison with the preceding year. Imports of foodstuffs, live stock, fertilizer, wood, and cotton declined, and the difficulty in obtaining cotton for the embroidery industry at St. Gall materially reduced the product. Other Swiss factories were enabled to report a satisfactory output by the increased imports of raw silks, metals, and coal. Exports of machinery and textiles, both cotton and silk, in some cases surpassed the previous year's figures. Shipments of Portland cement increased largely during the year. The Swiss watch trade was satisfactory during 1916, figures for the first six months showing improvement in the production and evidence of a gradual return to normal conditions. The policy of the government in conserving the nation's food stock accounts for the small shipments of cocoa powder and chocolate paste, chocolate, condensed milk, and cheese, the last named article declining to 24,587,936 pounds in the first half of 1916, as compared with the export of 44,810,935 pounds in the same period of 1915. In order to obtain the requisite food supplies and fuel and the raw materials for Swiss industries, the Federal government guaranteed that, with certain exceptions, neither imports from one group of belligerents nor articles manufactured from them shall be exported in any form to a country of the opposite group.

In the latter part of 1917 the fact was disclosed that Germany's great gun-makers, the Krupps, had opened a branch factory at Lucerne with a capital of 30,000,000 marks. The directors registered include Arthur Krupp and Counsellor Ernest Hauer, director of the principal Krupp factory at Essen. In compliance with the Swiss law providing that when new enterprises are established their objects must be set forth, the company declares its purpose to be the fabrication of arms, cannon, and munitions of war, the acquisition of factories, mines, and metals, and also their sale. The Krupps purchased several houses and a large amount of ground at Lucerne. Sixty-four expert employees had arrived there by the end of the year and 300 others were expected.

Commerce. Imports and exports of merchandise and precious metals (coin and bullion) are given below in francs:

	1913	*1914*	*1915*
Imports, mdse.	1,919,816,280	1,478,408,489	1,680,030,259
Imports, C. & B.	58,054,945	32,190,066	48,702,059
Exports, mdse.	1,376,399,116	1,186,887,049	1,670,056,267
Exports, C. & B.	34,409,778	8,110,795	2,885,840

Communications. There were, at the end of 1915, 5259.4 kilometres of railway in operation. The Swiss railways employ about 42,000 persons, of whom 35,200 work on state lines and 6800 on private railways. These figures are exclusive of the tramways or funiculars, which for the most part are common to the municipalities of the cantons. It was announced in the autumn of 1917 as possible that stage coaches might be seen again running between towns in Switzerland. Owing to the ever-decreasing amount of coal arriving from Germany, the Swiss government was forced to annul half the number of passenger trains in Switzerland, while those trains in service were not heated.

Finance. Details of the 1917 budget are given below:

Revenue	*1,000 Fr.*	*Expenditure*	*1,000 Fr.*
Customs, etc.	64,488	Military	37,010
Investments	9,206	Interior	12,156
Military	1,454	Ind. and agr.	14,245
Posts and Rys.	88,690	Customs, etc.	9,594
Ind. and agr.	1,882	Debt charge	40,607
Justice, etc.	870	Justice, etc.	1,749
Interior, etc.	10	Administration	1,548
Administration	112	Political	2,071
Political	598	Posts and Rys.	98,409
Miscellaneous	....	Miscellaneous	....
Total	169,872	Total	216,042

The public debt stood, January 1, 1917, at £23,064,000; floating debt, £8,900,000.

After the hotels, the railways, particularly the mountain lines, have suffered most from the war; and as some have already ceased paying interest on their bonds, legal protection will doubtless have to be provided. The average for Swiss exchange was 0.084 per cent above par in 1913, 1.101 per cent in 1914, and 6.224 per cent in 1915. The financial report of the Swiss National Bank for 1915 compares very favorably with those for other years, the average gold and silver reserve having been $55,829,689, as compared with $40,968,689 in 1914 and $37,364,800 in 1913. It was semi-officially announced, February 18, 1917, that the sixth Swiss "mobilization loan," of which 100,000,000 francs ($20,000,000) was offered at 99, with 4½ per cent interest, on January 31, brought 161,000,000 francs ($32,000,000) subscriptions, of which 139,154,600 francs ($27,800,000) was cash, the rest older bonds for conversion. European bankers estimated that one habitant of Switzerland out of every 150 must have been a subscriber.

Government. For 1917 Edmund Schulthess was president and Felix Calonder was vice-president of the Swiss Federal Council. On December 14 the latter was elected president for 1918, Eduard Muller succeeding him in the office of vice-president.

History. There were frequent rumors in January of an intention on the part of Germany to invade Switzerland. The French government on January 5 renewed the assurances that it had already given that it would respect the neutrality of Switzerland. In Switzerland itself such apprehension as was felt was directed wholly toward Germany. It was pointed out by a military authority that if the Germans wished they could find their way to Lucerne within twenty-four hours. The Federal government took measures to place Switzerland on her guard. It recalled to the colors the second division, which had been demobilized, and the president declared in an interview that if any one had the intention of violating the Swiss neutrality Switzerland would give its last man to resist. On April 14, 15,000 workmen met in Zürich and protested against the high cost of living. They demanded government monopoly in food supplies and distribution at fair prices. The demonstration became disorderly and began an attack upon two of the large hotels, but was soon dispersed.

Persistent reports were circulated in the German press in the autumn to the effect that the French meant to violate Swiss neutrality. It was said, for example, that France intended to despatch troops to the aid of Italy by the line of the Simplon tunnel. This resulted in the sending of a French message to the Swiss government to the effect that France would continue, as in the past, to respect rigidly and honorably the neutrality of Switzerland. German reports of criminal French intrigues in Switzerland continued. By the Allies they were interpreted as a sign that Germany herself intended to disregard the neutrality of Switzerland and was trying first to cast the suspicion of the same design upon the Allies.

The Grimm-Hoffman Case. Herr Grimm, Socialist deputy from Zürich in the National Council, who had gone to Russia in the interest of pacifist propaganda, was expelled from Russia by the order of the two ministers, Tseretelli and Skobelef. Herr Grimm was trying to negotiate a separate peace between Germany and Russia. In the course of his negotiations he spoke in the name of Herr Hoffmann, member of the Swiss Federal Council. Herr Hoffmann, as a result of the criticism following this revelation, resigned, and the president, Herr Schultess, declared that the council was wholly ignorant of his act and disapproved it. On June 25, the Federal Assembly met and elected as a successor to Herr Hoffmann, Herr Gustav Ador, president of the International Committees of the Red Cross Society, by a vote of 168 out of 219. Herr Ador was deputy from Geneva to the Federal Council. See Socialism.

SYRACUSE UNIVERSITY. A non-sectarian co-educational institution under the auspices of the Methodist Episcopal Church, located at Syracuse, N. Y. In the fall of 1917 there were 3056 students and 321 members of the faculty; about 1000 students and former students had entered the service of the government in 1917, and 17 members of the faculty were engaged in war work. Volumes in the library numbered 95,965 and there were also 40,000 pamphlets.

William L. Bray was appointed dean of the graduate school in place of William H. Metzler, resigned; Henry A. Peck was appointed dean of the college of liberal arts; and Mark E. Penney dean of the teachers' college. The late John D. Archbold pledged $500,000 to the university. The opening of the State College of Forestry building was celebrated and a large addition to the University Hospital of Good Shepherd was erected in 1917. The university was founded in 1870. Chancellor, James Roscoe Day, LL.D., L.H.D.

SYRIA. A division of Asiatic Turkey, lying east of the Mediterranean Sea. It consists of the vilayets of Aleppo, Syria, and Beirut, and the mutesarrifats of Lebanon, Jerusalem, and Zor. One estimate of area is 114,530 square miles. A population estimate places the number of inhabitants at about 3,675,000, but this figure is probably excessive. See WAR OF THE NATIONS; and RELIEF FOR WAR VICTIMS.

TAIWAN. The official name of Formosa, used by both Japanese and Chinese. See FORMOSA.

TANKS. See MILITARY PROGRESS.

TARIFF. There was much discussion of tariffs and free trade but little legislation with respect to customs duties during the year. In May and June much attention was given by the Committee on Ways and Means of the House of Representatives to proposals to raise some $200,000,000 of war revenue by tariff changes: this plan was later abandoned. Changes in the character of imports resulted in reductions of revenue from import duties in Great Britain, but the discussion of war aims and of world relations after the war led to extensive discussion of the pros and cons not only of national tariffs but of proposed tariff leagues. The Central European plans of Germany were known to contemplate an extension of the Zollverein principle to Austria, Hungary, and Bulgaria, and possibly Turkey. The Inter-Allied Economic Conference at Paris in June, 1916, at which the British Empire, France, Russia, Italy, Belgium, Spain, Japan, Portugal, and Serbia were represented, had declared in favor of an economic alliance among themselves to be enforced by tariff discriminations for the purpose of rendering themselves independent of enemy countries. Some aspects of the controversy resulting and the development of opinion in Great Britain are noted below.

TARIFF COMMISSION. By the Revenue Act of September 8, 1916, a permanent tariff commission of six members was created. The first appointments were for terms of 2, 4, 6, 8, 10, and 12 years, but thereafter all will be for terms of 12 years. Members receive $12,000 salary. The duties of the commission are to investigate all matters relating to the administration and the fiscal and industrial effects of the customs laws of the country; to put all information in its possession at the command of the president and Congress; to investigate tariff relations between the United States and foreign countries, including the effects of commercial treaties and economic alliances and the conditions of competition in foreign trade. On March 21, 1917, President Wilson appointed the following persons to this commission: F. W. Taussig, Daniel C. Roper, David J. Lewis, William Kent, William S. Culbertson, and E. P. Costigan. Professor Taussig was later designated as chairman and Mr. Roper, vice-chairman. The latter, however, resigned from the commission upon his appointment as commissioner of internal revenue by the president on September 26. The commission established temporary headquarters in Washington; it made W. M. Steuart chief statistician. One of the principal problems considered by the commission was the enactment of provisions to cover imports in "interim periods," or the time elapsing between the consideration of new duties and their final enactment. In this period American importers have been accustomed to bring in great quantities of goods in anticipation of the higher rates. In European countries this method of defrauding the treasury is obviated by "padlock laws" which prescribe that certain increases of duties shall go into immediate effect subject to readjustment in harmony with the rates finally established. The activities of the commission, however, in this matter were fruitless for the time being, because, although Congress gave considerable attention to changes in customs duties for many weeks, none were finally made. Nevertheless a special report, prepared by the commission, giving the examples of England, France, Italy, and other foreign countries, and showing great losses of revenue in past tariff agitations during the interim periods and urging Congress to give careful attention to this problem, laid a basis for effective action in the future.

The commission also investigated the administration of customs laws. It made a thorough historical inquiry and drew up a tentative draft of a proposed revision of the administrative code which it submitted to various departments and interested persons for criticism. It carried on an investigation as to the desirability of free ports or free zones. A free zone is defined by the commission in its *First Annual Report* as "an inclosed and guarded area where imported goods may be landed and held without customs house inspection or charges. They may there be stored, mingled, repacked, manipulated, and even manufactured. Such goods as are re-exported may be loaded and shipped without payment of duties or custom house interference." Of course, goods entering the country from the free zone must pay the established import duties. The commission made a special study of the possibilities of establishing free zones in some principal importing city of the Atlantic, the Gulf, and the Pacific Coasts.

Another important activity was the beginning of a thorough catalogue of tariff information. "somewhat in the nature of an encyclopædia." This will include a separate file for every article. The plan will also create a tariff library. The commission began preparations for a census of the American chemical industry in all its ramifications. Its first enumeration in this census was to be made early in 1918. It also began the collection of information regarding all industrial and revenue aspects of the sugar industry. Likewise it laid out an investigation of industrial disturbances due to the war; the necessary readjustments involved in peace; the stocks of goods held in European countries for export to the United States at the end of the war; and tariff changes needed to enable American manufacturers to meet after-war competition. Closely allied to this was the preparation of an extended report on all sorts of tariffs and commercial treaties. The commission said: "The report will cover the following points: (a) interpretations of the most favored nation clause in commercial treaties; (b) an historical and critical consideration of the commercial treaties of the United States, giving particular attenton to the reciprocity experiences of the United States and to the bargaining features of American tariffs; (c) the bargaining tariffs and the commercial treaty systems of the countries of continental Europe; (d) commercial relations of Canada, particularly the reciprocal relations and arrangements between the United States and Canada; (e) preferential tariffs of Australia, New Zealand, the South African Union, and India, and the proposed programmes of imperial preference within the British Empire; (f) commercial treaties and bargaining tariffs of the South American countries, with special reference to the preferential relations between the United States and Brazil; (g) situation of the Caribbean countries, with reference to treaty relations and commercial policy; (h) commercial treaty and tariff problems in the Far East." The law creating the commission especially provided that it should investigate "the Paris Economy Pact." To carry out this requirement the commission planned to send representatives abroad.

General Aspects. The fundamental importance of the tariff problem has come to be widely recognized. As shown by such writers as Walter Lippmann in *The Stakes of Diplomacy*, J. A. Hobson in *The New Protectionism*, Walter E. Weyl in *American World Policies*, and a host of others, the control of exclusive or preferential trade privileges, especially in undeveloped areas, is the chief consideration in international politics and an important cause of war. The tariff advocates laid much stress on the importance of national independence and self-sufficiency as a basis for defense in future wars; and on the advantages of trade alliances enforced by tariff preferences as the basis of military alliances. They were strongly favored by the enmities due to war, and especially by the discovery of the widespread reach of German influence and control throughout the world with respect to metals, other raw materials, manufacturing, and international trade and banking. Viewing wars as inevitable the tariff advocates held that the only safeguard against a restoration of the pre-war effects of German economic penetration lay in discriminating legislation. Free traders, on the other hand, held that the fundamentals of the theory had been unaffected or even strengthened by the war; that German trade should be met by equal skill and technique; that each nation would in the long run profit most from the broadest possible trade, including the buying and selling with present enemies; and that the future peace of the world is dependent primarily on such a growth of international trade as shall make every nation dependent to a large extent on many others for its supplies of customary necessities.

Great Britain. The Paris Economic Conference above mentioned was followed by the appointment of commissions in Great Britain, France, Russia, and Italy to further the proposed action. The British commission appointed in July, 1916, was headed by Lord Balfour of Burleigh and included heads of various government departments and ten distinguished public men, of whom five were members of parliament. This commission held many sessions, consulted various British interests, and finally issued its report in March, 1917. Its principal recommendations were: That steps be taken "to stimulate the production of foodstuffs, raw materials, and manufactured articles within the empire wherever the expansion of production is possible and economically desirable for the safety and welfare of the empire as a whole"; that as regards customs duties, "preference should be accorded to the products and manufactures of the British Overseas Dominions"; and that to achieve these ends early consideration must be given to "the desirability of establishing a wider range of customs duties which would be remitted or reduced on the products or manufactures of the empire, and which would form the basis of commercial treaties with the Allies and neutral powers." These proposals were widely regarded as foreshadowing the definite abandonment of the historic free-trade policy by Great Britain and a careful preparation of the resources of the empire for economic warfare upon the conclusion of peace. Against a restrictive policy it was argued that the idea of making England self-sufficing was chimerical; that the war had shown the free-trade policy to be the chief source of England's financial supremacy, by making her the world's banker and laying the basis of her naval power; that she thus had at her command the resources of the world on the best terms, which were wider, more varied, and more stable in supply than the resources of the empire; that the entrance of the United States with its immense market for British exports and its essential supplies of cotton and food products had altered the entire basis of after-war alliances; that the Dominions had not in general asked for preference, and for some of them it would be of doubtful expediency; and that the practical difficulties of a four-fold tariff—for empire, Allies, neutrals, and enemy countries—were insurmountable.

TASMANIA. A state of the Commonwealth of Australia. It consists of the island of Tasmania and various isles, most of them in Bass Strait, which separates the State from Victoria. The estimated area is 26,215 square miles, which is less than 1 per cent of the Commonwealth and about half the area of Alabama. Estimated population, March 31, 1916, 198,997, as compared with 191,211 at the 1911 census. The capital is Hobart, which, with suburbs, had an estimated population of 38,391 at the end of 1915; Launceston, 24,661.

The legislative power is exercised by a parliament of two chambers, the Legislative Council and the House of Assembly; members of the council number 18 and members of the assembly 30, and are elected for six and three years respectively. Woman suffrage was adopted in 1903. The executive authority is vested in a governor, who is appointed by the crown, and acts through a responsible ministry. The governor is Sir Francis Alexander Newdigate-Newdegate, K.C.M.G., who in 1917 succeeded Sir William Grey Ellison-Macartney. Premier and chief secretary, J. Earle. See Australia.

TAXATION. The demands of war finance raised stupendous problems of taxation. The growing expenditures resulted in the finding of new sources and the raising of existing rates, as shown by the income taxes in France and the higher rates on incomes and profits in Great Britain. In the United States entrance into the war was the signal for many striking tax proposals. Economists generally believed that a greater reliance should be placed on taxation and less on loans than in previous wars on account of the disastrous effects of loans on prices and subsequent costs of both private and public necessities. Professor O. M. W. Sprague, of Harvard, advocated that taxes be made the chief source of revenue. Many economists memorialized Congress in favor of a plan of half taxes and half loans. The plan adopted was nearer one-fifth taxes and four-fifths loans. See FINANCIAL REVIEW; TARIFF.

WAR REVENUE ACT. By all odds the most important piece of war finance legislation was the War Revenue Act of October 3. This was preceded by a long discussion in Congress of all phases of the problem and by widespread agitation of proponents of opposing views throughout the country. There were many who favored a policy of "pay as you go." They argued that in the last analysis the war must be paid for at the time it is carried on; that the popular supposition that the cost can be transferred to future generations by means of bond issues is a fiction, because as a matter of fact bonds only serve as a means of distributing the burden among different elements in the community. The real cost of the war, so it was argued, is, in addition to human life and suffering, the material goods consumed in its prosecution. When the war is over this consumption ceases and the actual costs of the war consequently also cease. The extreme advocates of this doctrine therefore advanced a proposal to conscript wealth, declaring that if we were to conscript man power we should conscript material resources. The opposite extreme was represented by those who favored extensive bond issues with only slight reliance upon taxation. They made much of the effect of taxation in "frightening capital" with a consequent undue interference with business and the abnormal disturbance of the entire economic basis of the national life. The actual measure was a compromise between these extremes and various other special views.

As enacted the law was expected to provide more than $2,500,000,000 for the year 1917. The act was divided into 13 parts dealing with the following subjects: (1) income; (2) excess profits; (3) beverages; (4) cigars, tobacco, and tobacco manufactures; (5) public utilities and insurance; (6) excises; (7) admission and dues; (8) stamp taxes; (9) estate taxes; (10) administrative provisions; (11) postal rates; (12) income tax amendments; and (13) general provisions. It was estimated that the excess profits tax would produce $1,060,000,000 of revenue, and that this income tax, which was in addition to that of September, 1916, would produce $842,000,000. The excess profits tax of this act wholly superseded the excess profits tax of March 3, 1917.

INCOME TAX. The war income tax of October, 1917, levied assessments in addition to those levied by the act of September 8, 1916. Both taxes applied to the income from all sources of every American citizen or resident. These laws levied a normal tax and a "super-tax" or "additional tax." The basis of levy for the normal tax is the difference between the net income of the individual and the personal exemption plus the sum of dividends which have been taxed at their source. The exemption under the act of 1916 is $3000 for single persons and $4000 for married persons living together, or heads of families. Section 12 of the act of 1917 amended the 1916 act by allowing $200 additional exemption for each dependent child under 18 or other dependents physically or mentally deficient. Exemptions under the act of October, 1917, are only $1000 for single persons and $2000 for married persons with the addition of $200 for each dependent.

The basis of levy for the super-tax or additional tax is under the act of 1916 all net income above $20,000 and under the act of 1917 all net income above $5000. All provisions apply to the calendar year. The tax for 1917 may be paid any time after assessment and must be paid not later than June 15, 1918. Payment may be made in installments. The following table indicates "additional" or "super taxes" under both acts and their total. This does not include the excess profits or "occupational" tax of 8 per cent on individuals with incomes over $6000; nor the normal taxes of 2 per cent.

Additional Taxes on Net Incomes Over	And not Over	Per Cent Under Act of 1916	Per Cent Under Act of 1917	Total Per Cent of Additional Tax
$5,000	$7,500	none	1	1
7,500	10,000	none	2	2
10,000	12,500	none	3	3
12,500	15,000	none	4	4
15,000	20,000	none	5	5
20,000	40,000	1	7	8
40,000	60,000	2	10	12
60,000	80,000	3	14	17
80,000	100,000	4	18	22
100,000	150,000	5	22	27
150,000	200,000	6	25	31
200,000	250,000	7	30	37
250,000	300,000	8	34	42
300,000	500,000	9	37	46
500,000	750,000	10	40	50
750,000	1,000,000	10	45	55
1,000,000	1,500,000	11	50	61

Thus, single men will pay 2 per cent on all incomes above $3000 under the act of 1916; and 2 per cent on all incomes above $1000 under the act of 1917; besides the additional taxes on incomes above $5000 as indicated in the foregoing table. A married man would pay 2 per cent on his income above $3000 less $200 for each legal dependent under the act of 1916; and 2 per cent on his income above $2000 less the same deductions for dependents under the act of 1917; besides the additional taxes on incomes above $5000 as indicated in the preceding table. Total tax on incomes above $5000 may be found by adding 4 per cent for the normal tax to the percentages given in the last column of the above table. While the number of returns in 1917 for the taxation of 1916 personal incomes was only 780,000 the number in 1918 was expected to exceed 6,250,000, and the yield was estimated at over $1,000,000,000.

The summary of the returns of the individual income tax for fiscal year ending June 30, 1917, issued on December 3, 1917, showed that income taxes had been paid by 429,401 persons in that year, and that the total yield was $180,108,340.10. Whereas the returns for 1915 had indicated that there were 14,771 millionaires in the United States, those for 1916 showed 22,696 millionaires. These figures are based on the supposition that persons with incomes of at least $40,000 belong to the millionaire class. The report showed that there were 206 persons in 1916 acknowledging incomes of at least $1,000,000, while 10 acknowledged incomes of $5,000,000 or more. There were 375,626 persons paying the tax on incomes between $3000 and $20,000; 31,079 persons paying on incomes between $20,000 and $40,000; 21,869 persons paying on incomes between $40,000 and $400,000; 621 persons paying on incomes between $400,000 and $1,000,000; 139 paying on incomes of $1,000,000 to $2,000,000; 48 paying on incomes of $2,000,000 to $4,000,000; and 9 paying on incomes of $4,000,000 to $5,000,000. The following States were those paying total individual income taxes in excess of $2,500,000, together with the amounts paid by them respectively: New York, $81,495,783; Pennsylvania, $17,860,341; Illinois, $11,739,952; Massachusetts, $10,959,847; Ohio, $8,066,088; New Jersey, $5,621,910; Oklahoma, $4,428,842; California, $3,870,314; Delaware, $3,666,351; Michigan, $3,627,884; Connecticut, $3,050,912; Texas, $2,781,779, and Missouri, $2,516,416.

The corporation income tax for 1916 (fiscal year 1917) yielded a total of $179,552,887. States paying the largest amounts were: New York, $48,566,000; Pennsylvania, $24,238,000; Illinois, $14,359,000; Ohio, $12,873.000; Massachusetts, $9,320,000; Michigan, $6,566,000; California, $6,147,000; and New Jersey, $5,250,000.

War Excess Profits Tax. For this tax the first taxable year was that ending December 31, 1917, except that where a corporation had its own fiscal year the first taxable year should be the fiscal year ending during the calendar year 1917. The term "pre-war period" as used in the act meets the calendar years 1911 to 1913 inclusive. The act specified the manner of determining the average annual profits in the pre-war period and indicated progressive rates of taxation for increasing amounts of war profits over and above the normal profits of the pre-war period. Thus where the excess profits due to the war were not over 15 per cent of the invested capital the tax was 20 per cent of such profits; where profits ranged from 15 per cent to 20 per cent on the capital the tax was 25 per cent; on profits of 20 to 25 per cent the tax was 35 per cent; on profits of 25 per cent to 33 per cent the tax was 45 per cent; and on profits above 33 per cent the tax was 60 per cent.

One of the sections inserted at the last moment and placing a tax on a trade or business with no invested capital or only a nominal capital aroused widespread resentment among professional men. It was found that this section (sec. 209) levied a tax of 8 per cent on the net income in excess of $3000 for a domestic corporation and in excess of $6000 for a domestic partnership or a citizen or resident of the United States, except members of Congress and officers of the government. It was pointed out that a tax of 8 per cent on the incomes of professional men, in addition to other taxes, placed an undue burden upon earned income. Consequently upon the convening of Congress in December steps were taken for the repeal of this provision. Opinion differed as to whether the section should be entirely repealed or extended to members of Congress and officers of the government previously exempted. After hot discussion the House of Representatives passed a bill with the latter intent.

Other Sections. The war tax on beverages included $1.10 per gallon on spirits in bond and $2.10 per gallon on spirits withdrawn for beverage purposes; the doubling of the taxes on beer, wines, and brandy; and a graduated tax on syrup and extracts used in the manufacture of soft drinks. The new taxes on tobacco and its manufactures included a tax of 25 cents per thousand on cigars weighing less than 3 pounds per thousand; of $1 per thousand on cigars weighing less than 3 pounds per thousand and retailing at from 4 to 7 cents each, with graduated increases up to $7 per thousand on cigars retailing at over 20 cents each; taxes of 80 cents or $1.20 per thousand on cigarettes according as they weigh less or more than 3 pounds per thousand; and 5 cents per pound on tobacco and snuff. The public utilities and insurance taxes included levies on receipts from freight transportation, from express and passenger services, from the sale of seats, berths, and staterooms on parlor cars or on vessels, charges for telephone, telegraph, and radio messages; and a tax of 8 cents on each $100 of life insurance (except that industrial policies of less than $500 pay 40 per cent of the first weekly premium) and 1 cent on each dollar of premium paid for marine inland and casualty insurance.

The war excise taxes levied 3 per cent on the selling price of automobiles, motorcycles, musical instruments, talking machines, jewelry, cameras, and sporting goods; 2 per cent on perfumes, cosmetics, proprietary medicines, chewing gum, and similar articles; one-fourth to one-half per cent per linear foot on motion picture films; graduated taxes upon watercraft; and half of the foregoing rates on retailers' stocks already on hand. Under title 7 a tax of 1 cent for each 10 cents or fraction thereof was levied on admission fees, with various modifications and exemptions; and 10 per cent on the dues and membership fees of social, athletic, and sporting clubs, when in excess of $12 a year. Under the stamp taxes various levies were made upon bonds, stock certificates, and their sales or transfers, sale of produce on exchange, drafts, or checks payable, deeds and papers of conveyance, custom-house entries, passage tickets to ports and places not in the United States, Canada, or Mexico, power of attorney, playing cards, and parcel post packages.

The Federal inheritance tax had been revived by the act of September 8, 1916; the rates were then increased 50 per cent by the act of March 3. The rates fixed in the act of October 3 ranged from 2 per cent on estates below $50,000 to 25 per cent on estates of $10,000,000 or more. The other classes were as follows: $50,000 to $150,000, 4 per cent; $150,000 to $250,000, 6 per cent; $250,000 to $450,000, 8 per cent; $450,000 to $1,000,000, 10 per cent; $1,000,000 to $2,000,000, 12 per cent; $2,000,000 to $3,000,000, 14 per cent; $3,000,000 to $4,000,000, 16 per cent; $4,000,000 to $5,000,000, 18 per cent; $5,000,000 to $8,000,000, 20 per cent; and $8,000,000 to $10,000,000, 22 per cent.

The principal increase in postal rates was that of 3 cents per ounce on letters, except drop letters (2c), and of 2 cents each for post cards. There were in addition various increases in parcel post rates and in the rates applicable to periodicals. The latter rates were graded according to the proportion of space devoted to advertising; and annual increases in such rates were provided for each year up to and including 1921.

FRANCE. An income tax law passed in July, 1914, affecting incomes above 5000 francs became operative in 1916. The rate was 2 per cent. Afterwards the exemption limit was lowered to 3000 francs ($600) and the rates graduated from 2 to a maximum of 10 per cent. Previous to this charge declarations were received from 285,000 persons with total incomes of 4,000,000,000 francs, but 180,000 persons claimed total exemption. After the change declarations were received from 560,000 persons with total incomes of 6,000,000,000 francs while exemptions were claimed by only 20,000. Contributors failing to make a return, and there were many such, had their tax fixed by the revenue officials on the basis of annual house rent.

This system was greatly modified for the fiscal year 1918. The new law requires a declaration of all income during 1917 from every tax payer; various exemptions to heads of families are allowed; and the maximum rate is advanced to 12½ per cent. There is a rebate of 2000 francs for a wife and a total of 2000 additional francs for children, besides the general exemption of 3000 francs. Distinction is made between earned incomes which are taxed at 3.75 per cent, revenue from foreign investments taxed at 6 per cent, and revenue from home investments taxed at 5 per cent.

GREAT BRITAIN. A thorough study of British finances by George Foster Peabody as summarized in *The Annalist* showed that total expenditures of the Government between August 1, 1914, and April 1, 1917, the end of the fiscal year, were $21,278,000,000. Of this sum $5,682,000,000 had been raised by taxation, an amount exceeding the normal peace revenues by $2,575,000,000. The normal peace expenditures for the same period would have been $2,760,000,000, so that the war expenses were $18,625,000,000. Of this latter sum $4,800,000,000 had been advanced to Allies and colonies. The ratio of the total sum raised by taxation to the total expenditures was $1 of taxes to $3.95 spent; or excluding the loans to Allies a ratio of $1 of taxes to $2.56 spent. This high proportion of taxes was deemed distinctly creditable to British financial methods. These figures indicated that the annual expenditures for war purposes had been about $7,000,000,000 a year. For the fiscal year ending March 31, 1918, the total revenue from taxes including the advance on war profits from 60 to 80 per cent and additional duties on tobacco was estimated at $3,190,000,000.

For the fiscal year 1917-18 Chancellor of the Exchequer McKenna asked for a total of about $11,000,000,000, of which two billions were for advances to colonies and Allies. At the same time the total income of Great Britain was estimated at about $12,500,000,000. The total revenues from all taxes in 1916-17 had been about $2,800,000,000; it was expected that this could be increased in 1917-18 to somewhat over three billions. The principal sources were as follows: income tax, $1,100,000,000; excess profits duty, $1,000,000,000; estate duties, $150,000,000; customs and excises about $550,000,000. The income tax rates were graded from 11½ per cent on earned incomes under $500 to 42½ per cent on incomes in excess of $50,000. The excess profits taxes in 1916-17 graded up to 60 per cent but were increased in 1917 so that the maximum rate was 80 per cent.

REFERENCES. Fred E. Clark, *The Purposes of the Indebtedness of American Cities, 1880-1912* (1916); H. G. James, *Municipal Functions;* W. F. Willoughby and others, *The System of Financial Administration of Great Britain;* numerous pamphlets issued by leading banking houses, dealing with the new income, inheritance, and excess profits taxes; W. E. Hannan, *Property Exempt from Taxation in the Forty-eight States.*

TAYLOR, SIR WILLIAM. A British army surgeon, died at Windsor, England, in April, 1917. He was born at Moorfield, Ayrshire, in 1843, and was educated at Glasgow University. Joining the army medical staff in 1864, he served in different parts of the empire during important campaigns. While in Canada as a young man he took part in the operations against the Fenian raiders on the Vermont border and was awarded a medal. Many years of his life were spent in India (1870-80, 1882-93, and 1898-1901). During the first of these periods he participated in the Jowaki expedition and earned another medal, in the second period he served on the staff of the commander-in-chief during the Burman campaign, again distinguishing himself, and finally he was principal military officer to the British forces in India. This last post or its counterpart he had already held in the Ashanti expedition of 1895-96, when he won the Queen's star and was specially promoted to surgeon-general, and in Kitchener's march to Khartum in 1898. Taylor was present at the battle of Omdurman and received as the reward for his services the C.B., second-class Medjidie, and English and Egyptian medals. During the Chino-Japanese War he had been sent to act as military-medical attaché to the Japanese army. He retired in 1904 after three years as director of the army medical service, and, after becoming honorary physician to the king and receiving the K.C.B., he was also created a Knight of Grace of the Order of St. John of Jerusalem in England, and Glasgow honored him with an LL.D.

TEACHERS' COLLEGE. See COLUMBIA UNIVERSITY.

TEACHERS IN PUBLIC SCHOOLS. See EDUCATION IN THE UNITED STATES.

TEACHERS' INSURANCE AND ANNUITY ASSOCIATION. See UNIVERSITIES AND COLLEGES.

TELEPHONY. The year 1917 brought out comparatively few improvements in telephone apparatus; there were minor changes introduced in switchboard devices and methods of wiring for the purpose of facilitating connections between subscribers and making it possible for an operator to supervise her lines more readily. Semi-automatic systems held their own in competition with the long-established manual systems. The predominating influence in the telephone industry was, of course, that of the war. In addition to an enormously increased demand for service it became evident as soon as the United States entered the war that it would be almost impossible for the manufacturing companies to secure material needed to supply the normal growth of their lines and exchanges. In addition to this there was a very great change in the number and character of employees owing to the large number who voluntarily enlisted or were drafted. At the same time the personnel of the exchange operators was also greatly affected, and judging from the public appeals issued by the various operating companies of the Bell system it was increasingly difficult towards the end of the year to secure a sufficient number of operators to take the places of the women who had left.

Mr. J. J. Carty, chief engineer of the New York Telephone Company, was made major in the Officers' Reserve Corps, U. S. Army, and at the close of the year was with the American armies in France in charge of telephonic and telegraphic communication.

In the annual report of Mr. Burleson, the postmaster general of the United States, it was recommended, as in the previous year, that the government take over all telephone and telegraph lines and operate them. This recommendation met with no general public support and at the close of the year there seemed to be no marked demand for any such action, as both these systems of communication were rendering unusually efficient service not only to the public at large, but particularly to the various branches of government activity.

TELESCOPES. See ASTRONOMY.

TENNESSEE. POPULATION. The estimated population of the State on July 1, 1917, was 2,304,629. The population in 1910 was 2,184,789.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	3,900,000	111,150,000	$133,380,000
	1916	3,000,000	78,000,000	73,320,000
Wheat ...	1917	522,000	4,830,000	10,723,000
	1916	830,000	7,885,000	13,236,000
Oats	1917	300,000	7,350,000	6,100,000
	1916	260,000	5,460,000	3,385,000
Potatoes .	1917	52,000	4,888,000	6,159,000
	1916	36,000	2,952,000	4,398,000
Hay	1917	892,000	*a* 1,142,000	22,041,000
	1916	1,050,000	1,449,000	21,735,000
Tobacco .	1917	101,000	*b* 18,810,000	13,908,000
	1916	102,200	18,760,000	8,258,000
Cotton ..	1917	857,000	*c* 206,000	28,119,000
	1916	887,000	382,000	37,286,000

a Tons. *b* Pounds. *c* Bales of 500 pounds gross weight.

MINERAL PRODUCTION. The production of coal in 1916 was 6,137,440 tons, an increase compared with 1915 of 407,088 tons, or 7 per cent. The most important influence causing this increase was the demand for coke and coal by the iron industry. Railroad consumption of coal was greater than in 1915, and all the industries of the State and in nearby States, which depend on this coal, were in full operation, and using a maximum quantity of fuel. During the first half of the year the car supply was ample, and operators were able to furnish all the coal required. During this period there was a surplus of labor. In the last half of the year, however, there was a shortage of cars and of labor.

The production of iron ore in 1916 was 455,834 gross tons, compared with 284,185 tons in 1915. The ore shipped from the mines in the State in 1916 was valued at $736,397, compared with a value in 1915 of $408,204.

The mined production of gold, silver, copper, lead, and zinc in Tennessee in 1916 was valued at $10,764,189, compared with $7,298,406 in 1915, an increase of $3,465,783. The copper output of the State in 1916 was 14,679,794 pounds, valued at $3,611,229, and the zinc was 52,855,480 pounds, valued at $7,082,634.

TRANSPORTATION. The total mileage of the State in 1916 was 4102. The railways having the longest mileage were: Southern Railroad, 891; Louisville and Nashville, 862; Nashville, Chattanooga, and St. Louis, 899; Illinois Central, 348.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include three hospitals for the insane, the Tennessee Deaf and Dumb Schools, the Tennessee School for the Blind, Confederate Soldiers' Home, Tennessee Industrial School, Tennessee Reformatory for Boys, The Blind Girls' School, and the State Penitentiary.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below:

Laws relating to prisoners and the punishment for crime were amended in important details. The contract system of letting out prison labor to private contractors was prohibited. The question of whether there shall be a constitutional convention is to be submitted to the voters at the next general election. A measure providing for the budget system for preparing and enacting annual legislation was created. A compulsory system of party primary elections was provided for, and provision was made for the voting of citizens absent from the State in the national service. A general prohibition law was passed. An act was passed prohibiting the limiting of output of coal for the purpose of raising the price; and measures were enacted for the inspection and regulation of the sale of gasoline and other products. The insurance laws were amended in important particulars. The laws relating to health were also amended. Governor Rye, on February 2, signed the prohibition bill passed by the legislature forbidding the importation of liquor into the State.

STATE OFFICERS. Governor, Thomas C. Rye; Secretary of State, J. B. Stevens; Treasurer, Porter Dunlap; Auditor, Hayes Flowers; Commissioner of Agriculture, H. K. Bryson; Superintendent of Education, S. W. Sherrill; Comptroller, John B. Thomason; Adjutant-General, A. G. Buckner; Attorney-General, Frank M. Thompson; Commissioner of Insurance, L. K. Arrington—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, M. M. Neil; Justices, S. C. Williams, D. Lansden, Arthur S. Buchanan, and Grafton Green; Clerk, Preston Vaughn.

TENNESSEE, UNIVERSITY OF. A non-sectarian co-educational institution at Knoxville, Tenn. In the fall of 1917 there were 779 students and 243 members of the faculty. Volumes in the library numbered 42,600. Productive funds in 1917 amounted to $425,000 and the income therefrom to $26,529. The university was founded in 1794. President, Brown Ayres, LL.D., D.C.L.

TENNIS. All championship tournaments in tennis were cancelled in 1917 except those in which juniors and boys competed. This was in accordance with the decision reached by the United States Lawn Tennis Association when war was declared and the call to the colors had been answered by a vast majority of the star players of the country. Under the conditions the success the sport attained during the season is especially noteworthy. The so-called "patriotic" tournaments held not only preserved the prestige tennis had secured but the receipts from them enabled the association to finance and man two ambulance units which were presented to the government.

Robert Lindley Murray, of California, won the highest honors of the year by capturing the singles in the patriotic tournament, held at the West Side Club, Forest Hills, L. I. Murray defeated in turn William T. Tilden, 2d, Craig Biddle, John R. Strachan, and Nathaniel W. Niles. Richard Norris Williams, 2d, the title holder, was eliminated by Niles in the semi-final round.

The women's patriotic singles were won by Miss Molla Bjurstedt, the champion. Miss Bjurstedt and Miss Eleanora R. Sears were the victors in the women's doubles and Miss Bjurstedt and Irving C. Wright in the mixed doubles. The national junior title went to Charles S. Garland, of Pittsburgh, and the boys' crown was secured by Vincent Richards, of Yonkers, N. Y.

A summary of the principal tournaments held in the United States follows:

National Patriotic Singles, Forest Hills—Final round, Robert L. Murray defeated Nathaniel W. Niles, 5-7, 8-6, 6-3, 6-3.

National Patriotic Doubles—Longwood Cricket Club, Boston—Final round, Fred B. Alexander and Harold A. Throckmorton defeated Harry C. Johnson and Irving C. Wright, 11-9, 6-4, 6-4.

Women's National Patriotic, Philadelphia Cricket Club, Philadelphia—Singles, final round, Miss Molla Bjurstedt defeated Miss Marion Vanderhoef, 4-6, 6-0, 6-0; doubles, final round, Miss Bjurstedt and Miss Eleanora Sears defeated Mrs. Robert Le Roy and Miss Phyllis Walsh, 6-2, 6-4; mixed doubles, final round, Miss Bjurstedt and Irving C. Wright defeated Miss Florence A. Ballin and W. T. Tilden, Jr., 10-12, 6-1, 6-3.

Clay Court Patriotic, Cincinnati, Ohio—Singles, final round, Samuel T. Hardy defeated Charles S. Garland, 3-6, 6-1, 1-6, 6-3, 6-3; doubles, final round, Hardy and Garland defeated H. T. Emerson and W. H. Hopple, 6-4, 6-2, 6-3; women's singles, final round, Miss Ruth Sanders defeated Mrs. Walter Ellis, 6-1, 6-3; women's doubles, final round, Miss Sanders and Mrs. Charles Gregg defeated Mrs. Walter Ellis and Miss Adele Levy, 6-4, 6-2; mixed doubles, final round, Miss Sanders and Howard Cordes defeated Miss Leonora Hofer and Charles S. Garland, 6-1, 6-2.

Junior and Boys' Championships, West Side Tennis Club, Forest Hills, L. I.—Junior singles, final round, Charles S. Garland defeated Fritz Bastian, 6-2, 6-1, 2-6, 6-3; boys, final round, Vincent Richards defeated J. D. E. Jones, 6-0, 6-3, 6-1.

National Indoor, Seventh Regiment Armory, New York City—Singles, final round, S. H. Voshell defeated C. B. Herd, 7-5, 6-3, 6-3; doubles, final round, Dr. William Rosenbaum and Fred B. Alexander defeated A. H. Man, Jr., and C. B. Herd, 6-4, 6-4, 2-6, 7-9, 6-4.

National Women's Indoor, Seventh Regiment Armory, New York City—Singles, final round, Miss Marie Wagner defeated Miss Eleanor Goss, 6-3, 6-1; doubles, final round, Miss Wagner and Miss M. H. Taylor defeated Mrs. Anderson and Miss Howe, 6-4, 6-4.

Junior National Indoor, Seventh Regiment Armory, New York City—Singles, final round, E. H. Binzen defeated H. B. O'Boyle, 6-1, 7-5, 6-3; doubles, final round, Willard Botsford and R. B. Haines defeated I. L. Hopkins and F. N. Hopkins, 6-3, 6-2, 5-7, 6-3.

Western Patriotic, Chicago, Ill.—Men's singles, final round, Walter T. Hayes defeated Samuel T. Hardy, 6-3, 6-0, 6-1; men's doubles, final round, Garland and Hardy defeated Hayes and Burdick, 6-2, 4-6, 7-5, 3-6, 6-3; women's singles, final round, Miss Carrie B. Neely defeated Miss Mary K. Voorhees, 6-0, 6-3; women's doubles, final round, Miss Neely and Miss Seavey defeated Miss Steever and Miss Voorhees 15-13, 6-3.

Pacific Coast, Oakland, California—Singles, final round, William M. Johnston defeated John R. Strachan, 6-3, 0-6, 6-1, 4-6, 6-2; women's singles, final round, Mrs. G. W. Wightman defeated Miss Helen Baker, 6-8, 6-0, 6-0.

Women's Metropolitan Patriotic, West Side Tennis Club, Forest Hills, L. I.—Singles, final round, Miss Molla Bjurstedt defeated Mrs. C. V. Hitchins, 6-3, 6-1; doubles, final round, Miss Molla Bjurstedt and Miss Marie Wagner defeated Miss Helen Pollak and Miss Helen Bernhardt, 6-1, 7-5; mixed doubles, final round, Miss Bjurstedt and A. H. Man, Jr., defeated Miss Florence A. Ballin and Fred B. Alexander, 6-4, 8-6.

TERRESTRIAL MAGNETISM. During the year 1917, the United States Coast and Geodetic Survey published a fifty-one-page pamphlet, containing the results of the magnetic observations made by the survey at 352 stations and in 33 States and Territories. These were tabulated and gave the declination, dip, and horizontal intensity for a number of stations whose geographic position was determined, as well as a separate description of each station. These values obtained in 1916 were compared with earlier values at the same stations, or those in the vicinity of older stations, so that the information was of special value to surveyors and engineers, engaged in reproducing on the ground the lines of old surveys made with the magnetic compass. In addition, various auxiliary stations were occupied, and the result was the accumulation of valuable data.

TEXAS. Population. The population of the State in 1910 was 3,896,542 and on July 1, 1917, it was estimated to be 4,515,423.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	7,075,000	77,825,000	$129,968,000
	1916	6,800,000	129,200,000	134,368,000
Wheat ...	1917	1,350,000	16,200,000	34,020,000
	1916	1,200,000	13,200,000	22,836,000
Oats	1917	1,425,000	37,050,000	30,381,000
	1916	1,500,000	42,750,000	26,078,000
Rice	1917	230,000	6,210,000	12,420,000
	1916	235,000	10,575,000	9,094,000

		Acreage	*Prod. Bu.*	*Value*
Potatoes .	1917	46,000	2,760,000	$5,796,000
	1916	40,000	2,000,000	3,800,000
Hay	1917	450,000	*a* 450,000	9,000,000
	1916	480,000	576,000	6,048,000
Tobacco ..	1917	200,000	*b* 184,000	70,000
	1916	200,000	140,000	28,000
Cotton ...	1917	11,052,000	*c* 3,115,000	415,852,000
	1916	11,400,000	3,726,000	361,398,000

a Tons. *b* Pounds. *c* Bales of 500 pounds gross weight.

Mineral Production. The coal production of the State in 1916 was 1,987,503 net tons, valued at $3,092,663, a decrease of 101,405 tons from 1915. The decrease was mainly in the bituminous districts. A strike that closed many of the mines during September was the chief cause of the decrease, as the demand for coal by railroads and industries was good, and the supply of cars and labor was abundant during the year.

The production of petroleum in Texas in 1916 surpassed all previous records, and the State continued to hold third rank among the oil-producing States. The total production was 27,644,605 barrels, valued at $25,760,335 in 1916, compared with 24,942,701 barrels in 1915, valued at $13,026,925, an increase of 11 per cent in quantity and 98 per cent in value.

The output of metals mined in 1917 amounted to $1000 in gold, 579,000 ounces of silver, 160,000 pounds of lead, and 20,000 pounds of copper, compared with $414 in gold, 653,455 ounces of silver, 49,927 pounds of lead, and 99,569 pounds of copper, and 232,388 pounds of zinc in 1916.

The output of metal mined in 1916 had a total value of $489,466 compared with $365,480 in 1915. Silver is the principal metal produced.

Transportation. The railroad mileage of the State on June 30, 1916, was 15,655 miles of main track and branches, with 4208 miles of yard tracks and sidings.

Finance. The report of the State treasurer for the fiscal year of 1916, the latest for which statistics are available, showed a balance at the beginning of the year of $3,512,991. The receipts of the year amounted to $15,856,850, and the disbursements amounted to $16,324,550, leaving a balance of $3,045,291 in the treasury on April 31, 1917.

Education. The total enrollment of white pupils in the elementary schools of the State in 1916, the latest year for which data are available, was 732,744. In the high school grades there were enrolled 88,708, making a total enrollment of 821,432. The number of teachers employed in the schools for white children numbered 23,578, of which 17,019 were female and 6559 male. In the school for colored children there were employed 3780 teachers of whom 2562 were female and 1215 male. The average annual salary paid to male teachers in the elementary white schools was $491.55, and to female $405.35. In the colored schools the average salary of males was $395.67 and of females $340.89.

Charities and Corrections. The charitable and correctional institutions include the State penitentiary at Huntsville, State penitentiary at Rusk, Insane Hospitals at Austin, Terrel, and San Antonio, State Orphans' Home at Corsicana, State Epileptic Colony at Abilene, Deaf and Dumb Institute at Austin, Confederate Soldiers' Home, Confederate Women's Home, and the Deaf, Dumb, and Blind Institute for Colored Youths at Austin, State Juvenile Training School at Gatesville, State Tuberculosis Sanatorium at Carlsbad, and the Girls' Training School at Gainesville.

Politics and Government. A number of negro soldiers of the Twenty-fourth Infantry stationed at Houston started a race riot in that city. The trouble began with a conflict with the local police, who had arrested some men of the negro regiment with what was declared unnecessary violence. In retaliation for this, the negroes resolved to make a raid on the city and shoot some members of the police force. A number of them started out from their camp and killed some police and wounded several others. A number of the bystanders were also shot. Before the riot was finally quelled, seventeen were killed and a number seriously wounded. Among those dead was Captain J. W. Mattes of the Second Illinois Field Artillery, who, when he attempted to restrain the soldiers, was killed by them. The city was placed under martial law, and order was quickly restored. As a result of the affair, there was a demand by the people of the State for the removal of all negro regiments excepting those native to the State. After court-martial, thirteen soldiers were hanged on December 11 for complicity in the riots. Forty-one others were sentenced to life imprisonment and four to prison for short terms.

Governor Ferguson, in June, vetoed the appropriations for the State university. This action caused great dissatisfaction. The attorney-general of the State prepared an opinion, in which he pointed out that the veto was invalid because the governor indicated by special mark the items of the bill of which he disapproved. This, in the opinion of the attorney-general, left the grand total of the appropriation unaffected, and made it lawful for the State regents to use the entire available fund for the university for its support. The governor's action resulted from a controversy between him and President Vinson, of the university, over the refusal of the latter to dismiss certain members of the faculty to whom the governor objected.

In the first week of August impeachment charges were filed against Governor Ferguson for alleged misappropriation of public funds. The charges were made by the Speaker of the House of Representatives, who issued a call for a special session of the legislature to consider them. The legislature had already been summoned for the purpose of repassing the appropriation bill for the support of the university which the governor had vetoed a few weeks before. One of the acts in the indictment against the governor was that he attempted to defeat the constitutional requirements for the State support of the university, and only resubmitted the appropriation bill, which made the existence of the university possible, after indictment charges had been instituted against him. He was also charged with failure to pay money into the State treasury as required by law, and with keeping it for his own use; with placing public funds in his own bank without interest; and attempting to bribe members of the State Board of Regents and the Speaker of the House in order to influence their political actions. The governor denied all the charges brought against him, and declared that many of the acts for which he had been criticized had been committed as a matter of course by previous governors, whose conduct had never been questioned.

On August 23 the House of Representatives adopted, by a vote of 82 to 51, the recommendation of a committee appointed to consider the matter of impeachment charges. A commission of nine was appointed to draw up formal articles of impeachment for the approval of the House. On the next day twenty-one articles were filed in the Senate by the committee. With this action W. P. Hobby, lieutenant-governor, became governor of the State. The principal charges made in the indictment were those noted above.

The trial for impeachment was begun on September 22 by the Senate. After hearing the evidence for three days the Senate formally pronounced judgment, and declared the governor removed from office, and disqualified him from further holding any office in the State. Governor Ferguson had anticipated this action, and resigned a few hours before the judgment was pronounced. He announced, however, that he would be a candidate for governor at some future election. W. P. Hobby succeeded him as governor.

Of the twenty-one charges brought against the governor, ten were sustained. Nearly all these related to the misuse of trust funds and public money in favor of banks in which the governor had personal interest. He was, however, convicted of various unlawful attempts to coerce the Board of Regents of the University of Texas.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below:

Laws relating to safety and sanitation were amended. Adequate fire escapes are required on factories and semi-public buildings. The workingman's compensation law was amended to include injury without the State. Several amendments were made to the laws affecting public utilities. Pipe lines for the transportation of oil and gas are declared common carriers and are placed under the control of the railroad commission. An amendment to the constitution was proposed which declares that the conservation and preservation of all the natural resources of the State are public rights and duties, and provides for the creation of conservation districts. A mother's pension act was passed.

STATE OFFICERS. Governor, W. P. Hobby; Lieutenant-Governor, W. L. Johnson; Secretary of State, Geo. F. Howard; Adjutant-General, James A. Harley; Attorney-General, Benj. F. Looney; State Treasurer, J. M. Edwards; Comptroller, H. B. Terrell; Superintendent of Public Instruction, W. F. Doughty; Commissioner of Agriculture, Fred W. Davis; Commissioner of Insurance, ——————————all Democrats.

JUDICIARY. Supreme Court: Chief Justice, Nelson Phillips; Associate Justices, W. E. Hawkins and James E. Yantis; Clerk, F. T. Connerly.

TEXAS, UNIVERSITY OF. A co-educational State institution at Austin, Tex. In the fall of 1917 there were 1780 students and 176 members of the faculty. Volumes in the library numbered 130,000. J. Battle, professor of Greek for twenty-four years, resigned to become professor of Greek at the University of Cincinnati. Productive funds in 1917 amounted to $2,050,000 and the income therefrom to about $200,000. The university was founded in 1881. President, Robert Ernest Vinson, LL.D. See TEXAS for account of controversy of members of the faculty of the university and the governor of the State.

TEXTILE INDUSTRY. In the United States in 1917, a leading question in the textile industry was the manufacture of various materials needed for the army and navy, not only for uniforms but for such purposes as accoutrements, tentage, aëroplane cloth, gas masks, and other purposes. Various new uses were found for old fabric while special fabrics such as shell cloths made of silk noils were also being constructed. Mercerized cotton was being made for aëroplane wings and narrow cotton webbings for leather strappings were also new features. Cotton webbing to a large degree was replacing leather for various military accoutrements not only on account of the high prices of leather but for its greater serviceability and lighter weight. Towards the end of the year, plans were being made for increased production of cloth for aëroplanes, balloons, and gas masks, and for this purpose the fine count cotton spindles and looms would be utilized. Another new form of textile activity was a series of open-work fabrics which were being used for camouflage effects following the successful utilization of such material by the English and the French. Many hundred thousand yards of this material were contracted for in the United States and would be placed in connection with various screenings which the camouflage troops would construct. The reason for the decision to use cotton for aëroplane wings for the American machines was the fact that the Irish and Scotch linen manufacturers were unable to produce any more linen fabrics, the output of which was being utilized as fast as made by the Allies for the wings of their larger machines for which a special strength was required which linen was able to afford better than other materials. Nearly two-thirds of the production of the available linen looms of Belfast, Ireland, was of this material.

The cotton fabric that was being made in the United States was of two varieties. One, from combed Sea Island mercerized yarn weighing 4 oz. to the square yard and having 68 threads per inch in both warp and filling, showed a strength test of not less than 73 lbs. in both warp and filling on a sample 12 in. long and 1¼ in. wide. Another was of combed Sea Island mercerized yarn but heavier and stronger. Each aëroplane required 170 yds. of 40-in. cloth or 189 sq. yds. per plane, and to provide the cloth for 26,000 planes the contemplated production for the United States would involve the output of over 150,000 spindles. The new American mercerized cotton fabric seemed to meet all tests and with its subsequent necessary treatment after being stretched, it was thought, would answer every requirement. New balloon fabrics composed of a greater or less amount of silk were also being manufactured.

UNIFORM CLOTHS. The principal activity in the textile industry during the year centred in the woolen fabrics for the uniforms as purchased by the Quartermaster's Department through the Committee of Supplies of the Council of National Defense and the Bureau of Supplies and Accounts. Four fabrics, namely, 8½ to 9 oz. shirtings, 16-oz. all-worsted suitings, 30-oz. melton overcoating, and blankets all of khaki color formed the greater part of the volume of the woolen business. Before the war, all army specifications called for all-wool fabrics without deviation and with a particular antipathy to the use of shoddy or overworked wool or cotton. At first the Quartermaster's Department, when extensive purchases of uniforms were required, decided to retain the all-wool requirements, but later it became evident that with the scarcity and the increased price of wool it would be desirable to change the specifications. In the case of the shirtings, a cotton-warp fabric was adopted in place of the all-wool cloth, but in the 16-oz. all-worsted suitings used for the uniforms, the officials would not consider any change in view of the hard and constant wear to which it was subjected, though in a few emergency orders, an inferior cloth was substituted. In the case of the overcoatings, it was agreed that the construction of 25 per cent cotton and 75 per cent all-wool would be accepted for a 30-oz. fabric, but later the Advisory Committee recommended the admixture of 35 per cent of reworked wool with 65 per cent of pure wool, while later fabrics made up were composed of 50 per cent of wool and 50 per cent of shoddy. In the case of blankets, no cotton was allowed, but the proportion of material was finally agreed upon as 65 per cent of pure wool and 35 per cent shoddy.

It must be remembered that the admixture of shoddy was a debatable question, and did not necessarily involve the suggestion of fraud with which the term had been identified in the American popular mind since the days of the Civil War. Shoddy is a technical term for reworked wool obtained from woolen rags, and has a shorter fabric than pure wool. It decreases the strength of the cloth but according to experts it does not materially decrease the warmth, and shoddy was considerably warmer than cotton. It was stated in this connection that more shoddy had been used in the fabrics ordered by various governments in the United States markets than in those supplied to the American army.

In the navy the same procedure that had been followed as regards purchases and qualities for a number of years was pursued, and with the exception of a couple of cloths all-wool was demanded in the various garments and other articles of equipment. Naturally, the navy was not as extensive a buyer as the army whose Quartermaster's Department came in for considerable criticism during an investigation at the end of the year by the Senate Military Committee. Up to December 29, 1917, the Army Quartermaster's Department had purchased over 19,000,000 blankets; 20,000,000 yards of overcoatings and more than 30,000,000 yards each of shirting flannel and suiting involving the expenditure of more than $345,000,000.

COTTON CLOTHS. In cotton goods, the War Department had placed contracts for 250,000,000 yards of various cloths. In knitted goods the purchases had been as follows: winter drawers, 25,000,000 pairs; winter undershirts, 21,000,000; wool gloves, 11,000,000 pairs; wool light weight stockings, 31,000,000 pairs; wool heavy weight stockings, 21,000,000 pairs. The cotton goods industry flourished during 1917 with exports nearly three times above the normal, and new demands developing through the shortage of linens and burlaps. Merchants, mills, stockholders, and operatives received greater profits than ever before, notwithstanding the high prices of cotton. Naturally the government became an important customer, and its demands were enormous along many lines. For example, at Fall River, government orders for 150,000,000 yards of bandage and hospital supplies were apportioned among various mills including those whose looms had never worked upon such material before. By the end of the year it was estimated that the government had secured or contracted for at least $500,000,000 of cotton products, and it was stated that 60 per cent of a soldier's equipment consisted of cotton goods in some form or other. Up to November 1, cotton duck mills were engaged to full 80 per cent capacity, after that time no duck was sold to others than government workers except by permission of the Priorities Board. Looms used for carpets, quilts, heavy worsteds, and upholstery fabrics were utilized for cotton duck, and many of the mills normally engaged in the automobile trade returned to government fabrics. By July 9, 1917, an advance of 100 per cent in price of cotton duck products was announced, while the government obtained certain substantial discounts as a result of various conferences. The year was remarkable in the production of ginghams which were used more freely than ever previously. The shirting business declined during the year, as also fine goods in dress wear. Sheetings were very active during the year and also the manufacture of cotton bags. Fancy cottons were in restricted demand on account of war time economies, and particularly the cheaper and fancy goods.

In 1917, more than $13,000,000 was expended by Southern cotton manufacturers for increasing the number of spindles and looms. In some approximately 900 cotton mills of the South, 118,500 spindles and 4800 looms were contracted for by 26 established concerns, while 16 new enterprises invested over $10,200,000 in plants that would house 407,000 spindles and 11,700 looms. The cotton consumed by Southern mills had been increasing from year to year and in 1910, 2,341,000 bales went to Southern mills and 1,993,000 to other American mills. In 1916-17, about 4,360,000 bales of the 13,000,000 bale crops were consumed by Southern mills and about 3,000,000 by the other mills of the United States, principally New England.

In Great Britain (q.v.), the Lancashire cotton industry worked under unusual conditions, a lagging trade for six months being succeeded by general activity with an increase in yarn and cloth prices greater than the increase in the raw material. As a result, spinners and manufacturers in 1917 made more money than for many years previously, but under unusual and difficult conditions. In June, 1917, the British Government appointed a Board of Control consisting of representatives of the Board of Trade of the Employees' Association, and of trade unions officials, to whom were given power to regulate prices in raw cottons and products of yarn and cloths. There was a shortage in the supplies of American cotton, so that from September it was decided to reduce the output of the standing mills 70 per cent and in both spinning mills and weaving employers had to pay a levy on machinery running beyond 60 per cent, using the fund thus secured to compensate the operatives who were thrown out of employment. The first half of the year was not notable for a demand for cloth at the advancing prices, but by the summer an improvement set in and various customers were active buyers. Egypt and the South American markets were especially good customers, while at home the demand improved. The Government was a large purchaser and cloths were sold for the armies of France and Italy, while, as in other countries, aëroplane fabrics aroused considerable interest. In the beginning of 1917, operatives were receiving 10 per cent higher wages than at the outbreak of the war in August, 1914, and through the year there were various successive increases until towards the end the demand ran for added compensation, varying from 25 to 40 per cent. An agreement was reached that wages should be advanced 15 per cent, so that at the end of 1917, the increase over ante-bellum wages amounted to some 35 per cent.

Dyes. There was no scarcity of coloring matters during 1917, and outside of the volume of the production of dyes, there was little distinctive in this branch of the industry, so rapidly had it adjusted itself to new conditions. For the first quarter of the fiscal year ended September 30, aniline dyes were valued at $1,173,439, a figure that can be compared with the entire domestic production of aniline dyes for the fiscal year 1914, which was $2,470,096. In other words, the United States was exporting chiefly to England and her colonies, surplus dyes equal to the value of the entire yearly production before the war. The first effect of the war was to secure adequate blue and black dyes, which together comprised about three-quarters of the total dyeing operations. In 1917, manufacturers, in addition, were able to produce in the United States the brighter colors and to meet the demand for military and naval fabrics. It was interesting to note in the textile industry in the United States, development had been not only on the technical but on the commercial side in the dye industry, and had been formed on a proper basis. There was no reason why the United States should not be forever independent of Germany.

Woolens. In the manufacture of woolens during 1917, the purchases of the United States government predominated the industry and its markets. The various manufacturers allotted what surplus goods they had, and there was a patriotic response on all hands to help the government. The woolen industry was asked early in the war to coöperate in order to conserve supply of wool, which was rapidly advancing, and in many fabrics the increase in cotton and shoddy filled materials became general. The American manufacturers suffered from high prices and the scarcity of material, as Great Britain would not permit wool to come from Australia and the only foreign supplies of clothing wool were received from South America and South Africa. Towards the end of the year a small amount of Australian wools was permitted to enter the United States and was sold at auction.

The National Association of Wool Manufacturers reported as follows on active and idle machinery in the wool manufacture, December 31, 1917, with percentages of idle to total as reported:

MACHINERY REPORTED AS OF DECEMBER 31, 1917

	Looms					*Spinning Spindles*	
	Wider Than 50-Inch Reed Space	*Under 50-Inch Reed Space*	*Carpets and Rugs*	*Cards*	*Combs*	*Woolen*	*Worsted*
In operation	39,624	11,417	3,045	8,690	1,756	1,241,662	1,410,822
Idle	4,233	1,572	1,479	243	154	81,780	244,356
Total	43,857	12,989	4,524	8,933	1,910	1,323,442	1,655,178
Machinery employed on American war orders	15,889	2,513	226	1,599	631	549,800	594,111
Percentage of war orders to total in operation	40.	22.	7.4	43.3	36.5	44.3	42.1
Percentage of idle machinery to total reported	9.6	12.1	32.7	6.1	8.1	6.2	14.7

Textile Mill Construction in 1917. During 1917, according to the authoritative reports of mill construction, annually compiled by the *Textile World Journal*, there were 297 new mills built for the various branches of the textile industry. This figure had not been equalled previously since 1906, when 303 new mill projects were put under way. In 1916, the total mill construction was 280, and the average for ten years from 1907 to 1916 was 254 new mills. The comparison of mill construction for ten years is given in the accompanying table, which also indicates the distribution in the various industries of the new mills:

	1917	*1916*	*1915*	*1914*	*1913*	*1912*	*1911*	*1910*	*1909*	*1908*
Cotton	52	51	24	26	27	37	32	67	80	47
Wool	24	23	19	21	24	24	20	31	47	23
Knitting	97	113	111	110	142	122	92	113	105	94
Silk	86	60	25	51	54	46	38	34	37	33
Miscellaneous	38	33	40	37	30	36	26	29	20	25
	297	280	219	245	277	265	208	274	289	222

From this table it will appear that the miscellaneous plants, including dyeing, bleaching, and finishing works, and the silk industry were responsible for the large increases over 1916.

Taking up the various industries, it will be found that of the 52 new cotton mills, the largest number were established in North Carolina, which State also led in the average importance of the various projects. New cotton mills were added in Alabama, Georgia, South Carolina, Texas, and Tennessee. There were naturally a number of enlargements and improvements by old established mills, which as usual were in many cases more important than the new constructions. The new mill built by the Penrod Mills at New Bedford, Mass., for tire fabrics, a mill for fine-combed yarns at Gastonia, N. C., by the Ranlo Manufacturing Company, and a similar mill at the same place for the Smyre Manufacturing Company were among the notable new constructions of the year. The various enlargements and improvements were made by such concerns as the California Cotton Mills, Oakland, Cal.; the West Point (Georgia) Manufacturing Company; the Pacific Mills at Lawrence, Mass.; and a number of others in all parts of the United States.

As regards the 24 new woolen and worsted mills, 9 were in New England, 6 in Pennsylvania, and 1 each in California, Illinois, New Jersey, New York, Ohio, Oregon, Tennessee, Utah, and Wisconsin. Most of these were small, the most notable new mill being perhaps that of the Norwich (Conn.) Woolen Company. At Warren, R. I., the Narragansett Worsted Mills of the American Woolen Company was the latest addition to the manufacturing resources of that company.

The knitting industry continued to grow in 1917, although there were but 97 new projects reported, as against 113 in 1916, or an average of 110 for 10 years. Many corporations were ready to build and extend, but difficulty in securing machinery and supplies was largely responsible for the decreased figures. The new knitting mills for the most part were located in Southern States, 46 new plants, chiefly hosiery projects, being in this section, with North Carolina alone accounting for 25 and Tennessee for 12. Pennsylvania had the largest number of new knitting mills with 26, but the South was increasing as a factor in this industry. In addition to the new constructions, there were also important enlargements and improvements throughout various parts of the country.

The silk industry still continued to concentrate in New Jersey and Pennsylvania, as 66 of the 96 new mills were reported for these two States. Paterson, N. J., alone had 38 new silk mill projects, most of them being for broad silk weaving plants of a few looms.

As regards the miscellaneous new mill constructions of 1917, there were 16 plants for dyeing, bleaching, finishing, printing, mercerizing, or otherwise processing textile products in various forms. The war had made but little difference in the demand for the products of raw stock bleaching and cotton plants, and only one new mill in this line got under way during the year.

Foreign Trade in Textiles. The foreign trade in textiles in the United States for the fiscal year ending June 30, 1917, was in many respects remarkable. The cotton goods exported reached a total value of $136.253,858, where the highest figures known before the war had been less than $56,000,000. The trade with South America showed a material increase, the exports of cloth alone aggregating 166,134,044 yards, as compared with 91,720,850 yards in 1916 and 35,870,895 yards in 1915. The amount of cotton goods exported to Mexico was nine times in excess of the trade in 1915, while Canadian trade in cloth was three times the yardage of 1915. On the other hand, the trade with the Far East, which before the war was considered to be the most important foreign market for American cotton goods outside of Cuba, the West Indies, and the Philippines, declined to very small proportions. The exports of wool during 1917 amounted to $27,327,451, as compared with $53,983,655 in 1916, and $18,423,556 in 1915. Wearing apparel was the leading item and France was the largest customer, followed by Great Britain and Canada. The imports of cotton goods in the fiscal year 1917 were valued at $56,181,684, which approximately was very close to the average of the years before the war. More cotton goods were imported from the United Kingdom in 1917 than in the previous years, the amount totalling $13,163,620, as compared with $7,397,162. The imports of unmanufactured wool in the United States in 1917 aggregated in value $131,137,170, as compared with $142,420,734 in 1916 and $68,242,568 in 1915. The total manufacture of wool amounted to $18,862,463 in 1917, as compared with $15,657,537 in 1916 and $29,791,356 in 1915. The imports of raw silk in 1917 were valued at $160,571,808, as compared with $124,333,655 in 1916 and $83,130,557 in 1915. The imports of manufactured silk in 1917 were valued at $40,322,840, as compared with $31,911,793 in 1916 and $25,042,670 in 1915. The manufactures of artificial silk fell to $1,523,939 in 1917 from $3,102,089 in 1916. The total manufactures of linens and burlaps amounted in 1917 to $78,955,185, as compared with $68,445,531 in 1916.

THEOSOPHICAL SOCIETY, The. In 1917 the American section of the Theosophical Society had 6641 members and 184 churches. The total membership of the society was about 30,000. Altogether, since the Theosophical Society was founded in 1875, more than 1400 branches have been established. At the end of the fiscal year, June 30, 1917, the balance of cash in the treasury was $7269. Thirty new lodges were organized in the fiscal year. The national president of the American section is A. P. Warrington and the national headquarters are at Krotona, Hollywood, Los Angeles, Cal. The national secretary is Craig P. Garman. The general headquarters of the society were removed in 1879 from New York City to Adyar, Madras, India, and there the president, Mrs. Annie Besant, resides. Branches of the society have been established in all parts of the world.

TIBET. A Chinese dependency in central Asia. Estimated area, 756,000 square miles, including Koko-Nor and Tsaidam. Estimated population, 2,000,000. The capital is Lhasa, with an estimated population of 15,000 to 20,000, including a large number of Buddhist monks. To some extent grazing and a primitive agriculture are carried on, and gold, borax, and salt are worked. The trade is principally with China and India.

TICK. See Veterinary Medicine.

TIMBER. See Forestry.

TIN. The production of tin throughout the world in 1917 was approximately 135,000 short tons, or about the same as in 1916. The output of the Federated Malay States continued to decline, but this decline was more than counterbalanced by the heavy increase in the production of Bolivia, amounting to 8000 tons. There was an increase in the cost of production, and an increase in prices, which reached a maximum monthly average of 87.12 cents in New York in December. The average price for the year was 61.80 cents, as compared with 43.48 cents in 1916, and 38.59 in 1915. There was a tendency for stocks to increase and for consumption to decline. The difficulties and high rates of freight and legislation and hostile interference with shipping acted to develop uncertainty in the tin markets. In the United States the tin industry naturally was hampered by the prevailing scarcity of steel, although it was fairly active during the year. There was not, however, any great enlargement of the capacities of existing plants. The United States Geological Survey reported the production of tin in the United States in 1916 as 280,000 pounds, valued at $121,744, as compared with 204,000 pounds, valued at $78,846 in 1915. See Chemistry, Industrial, *Metals*.

TIROL. An Alpine crownland of Austria, constituting the greater part of the administrative district of Tirol and Vorarlberg. North of Tirol is Bavaria; east, Salzburg and Carinthia; southeast, the Italian compartimento of Venetia; west, the Italian compartimento of Lombardy, the Swiss canton of Grisons, and Vorarlberg. Area, 10,302 square miles; population, according to the census of December 31, 1910, 946,613

TOBACCO. The tobacco crop of the United States in 1917 was the largest ever grown, estimated at 1,196,451,000 pounds. This compared with 1,153,270,000 pounds in 1916, and the five-year average of 983,723,000 pounds. The increase was due to increase both in the acreage and the acre-yield. Prices were unusually high, the average being nearly 25 cents, or 10 cents more than in 1916 and more than twice the average price for 1911-15. The result was a farm value for the 1917 crop estimated at $297,442,000, or nearly three times the five-year average.

The United States Internal Revenue report for the fiscal year 1917 showed large increases in tobacco taxes all along the line. The output of cigars was the largest ever recorded—8,266,770,593, representing an increase of 876,587,423 over 1916. Tax was also paid on more than 30 billion cigarettes, an increase of nearly 50 per cent. There were 35,377,751 pounds of snuff manufactured, over 2,000,000 pounds more than in 1916, and 445,763,206 pounds of smoking and chewing tobacco, an increase of over 28,000,000 pounds.

The total internal revenue from tobacco manufacturers amounted to $103,201,592.16, or over $15,000,000 more than in 1916. The largest revenue was from cigarettes, which paid taxes aggregating more than $38,000,000, followed by cigars with over $25,000,000, and manufactured tobacco with over $35,000,000. The special taxes (not including the new war tax) returned nearly a million dollars. The new revenue laws passed during the year impose special war taxes on cigars, cigarettes, and other tobacco manufactures and also upon the business of tobacco manufacturing. These taxes, together with the generally high prices of leaf tobacco, quite materially increased the cost of the manufactured products to the consumer.

TOBAGO. See Trinidad and Tobago.

TOGO. A German protectorate in West Africa, on the Guinea coast between Dahomey (French) and the Gold Coast (British); held by the Entente Allies since 1914. It has a smaller area, but a larger average population per square mile, than any of the other German possessions in Africa. The estimated area is 87,200 square kilometres (33,668 square miles), which is a little larger than the State of Maine. A German estimate made shortly before the great war placed the colored population at 1,032,000. White inhabitants January 1, 1913, numbered 368, of whom 320 German. The protectorate was established in 1884. In August, 1914, it was invaded by French and British forces, and by the 25th of the month the conquest of the country was complete. Togo is divided provisionally into two parts, one administered by the government of the Gold Coast and the other by that of Dahomey. The German administrative headquarters was Lome.

The soil in the coast region is fertile, and to some extent the natives cultivate corn, yams, manioc, bananas, ginger, etc. The forests contain oil-palms, rubber trees, and dyewoods. Imports and exports in 1913 were valued at 10,631,000 and 9,138,000 marks respectively. About one-half the trade was with Germany. Exports in 1913 included: Palm kernels, 2,558,000 marks; raw cotton, 582,000; palm oil, 518,000; rubber, 360,000; cattle, 334,000; cacao, 333,000; silver coin, 3,195,000. There are three railways, metre gauge: Lome-Anecho, 27 miles; Lome-Palime, 74; Lome-Atakpame, 102; total, at end of 1913, 203 miles. The budget for 1915-16, as well as for 1914-15, balanced at 4,177,943 marks, the estimated receipts being almost wholly local and derived mainly from customs duties.

TOLEDO HIGH PRESSURE SYSTEM. See Fire Protection.

TONGA, or the Friendly Islands. Three groups of South Sea islands, constituting a British protectorate. Area, 390 square miles. Population, 23,011 Tongans, 346 other Pacific islanders, and 380 Europeans. The natives are Christians, mostly Wesleyans. The capital is Nukualofa.

TONKING. The most northerly division of the colony of French Indo-China, bounded on the north by the Chinese provinces of Yünnan and Kwangsi. Hanoï, the capital, is also the capital of French Indo-China. The chief crop is rice; others of importance are sugar cane, cotton, cardamoms, corn, and tobacco. See French Indo-China.

TORPEDO-BOAT DESTROYERS. See Battleships and Other War Vessels; Naval Progress; Submarine Operations; Submarines.

TORPEDO-PLANES. See Naval Progress.

TORONTO, University of. An institution of higher learning, at Toronto, Canada. In the fall of 1917 there were 2436 students and 393 members of the faculty. Approximately 4000 graduates and undergraduates had enlisted for military service at the end of the year. More than 400 graduates and undergraduates of the university had fallen in battle. The valuation of the assets of the university, including lands, buildings, and investments was for the year ending June 30, 1917, $7,098,572. Income for the same period from investments was $56,082; from government grants was $526,155; from fees was $188,425; and from other sources was $84,091. President, Robert A. Falconer, K.C. M.G.

TORRINGTON, Frederick Herbert. A Canadian musician, died November 20, 1917, at Toronto. He was born in Dudley, Worcestershire, England, and in 1853 became organist at Ste. Anne's, Bewdly. Later he emigrated to Canada and in 1857-69 he was organist at Great St. James's Street Methodist Church, Montreal. He was organist and musical director at King's Chapel, Boston, in 1869-73, and also professor in the New England Conservatory of Music; in 1873-1907 he was organist and choirmaster at the Metropolitan Church at Toronto, Canada, and became conductor of the Philharmonic Society there. Under his direction the first Toronto musical festival was held in 1886 and in 1888 he founded and was appointed director of the Toronto College of Music, an institution that has exercised a markedly beneficial influence upon the musical culture of the Dominion. He conducted the Toronto musical festivals in 1895 and 1896; and in 1903, with Sir Alexander Campbell Mackenzie, was associate conductor of the cycle of musical festivals in that city. In 1892 he was elected president of the Canadian Society of musicians. Among his works are organ music, choruses, hymn tunes, and services.

TRACK AND FIELD ATHLETICS. See Athletics.

TRACTORS IN AGRICULTURE. See Agriculture.

TRADE CONTROL. See Financial Review.

TRADE FAIRS. See Expositions.

TRADE UNIONS. The year was notable for the increased prominence given to labor organizations and leaders in connection with industrial problems of war time. In the United States the American Federation of Labor (q.v.) conspicuously aided the government, while, on the other hand, the Industrial Workers of the World (q.v.) were never more successful in disturbing industry or interrupting the plans of the administration. The intense loyalty of a large proportion of American labor was shown in the refusal of the Executive Council of the American Federation of Labor to send delegates to an international conference of trade unionists to be held in Switzerland in September to discuss union demands for peace. The calling of this conference was ordered June 8 by trade unionists from Holland, Denmark, Norway, Sweden, Finland, Germany, Austria, Hungary, and Bulgaria in convention at Stockholm. President Gompers cabled that the proposed conference was "premature and untimely." The conclusion of the Danbury Hatters' boycott case (see below) and certain decisions on the use of the injunction (q.v.) were of great interest to union labor. Labor organizations abroad were generally in strong sympathy with their respective governments, though counter notes were not infrequent and in Spain a general strike was inaugurated for political purposes. Consult also the following articles: Labor; Arbitration and Conciliation, Industrial; Strikes.

Danbury Hatters. Another chapter in the history of the famous boycott of the United Hatters of North America against Loewe and Company of Danbury, Conn., was written on June 7, when Judge Thomas of the United States District Court ordered the sale of the homes of 140 of the defendant hatters at Danbury, Bethel, and Norwalk. The case grew out of a strike begun in July, 1902; the boycott was carried out with the assistance of the American Federation of Labor; suit was begun under the Sherman Anti-Trust Law for the recovery of three-fold damages in December, 1903. At that time the United Hatters agreed in writing with each defendant "to pay all expenses of such defendants and to save each individual from all liability." The case was carried back and forth by the American Federation of Labor until the final decree of the United States District Court of Appeals in 1913. Thereafter the Federation collected a voluntary contribution amounting to $150,000. Final settlement was reached in July, when the prosecuting concern agreed to accept this sum as full compensation, $80,000 having already been paid by the Hatters' Union. Thus the homes of the individual hatters were saved to them. See Injunction.

Right to Solicit. On December 10 the United States Supreme Court, by a vote of 6 to 3, declared that under certain conditions trade union members did not have the right to solicit non-members to join them. The Hitchman Coal and Coke Company and the Eagle Glass Manufacturing Company, both of West Virginia, had established the "open shop" and employed non-union labor. Union representatives sought to induce the employees to join them with a view to compelling the concerns to unionize their plants. Judge Dayton of the United States District Court granted the companies injunctions against such soliciting and it was his action that the Supreme Court sustained. This court recognized the right of workmen to form unions and of employers to maintain the "open shop." In the case at hand, however, the purpose of the unions was not to increase membership so much as to compel the objecting companies to change their methods of business. The union delegates sought to induce employees to break contracts into which they had voluntarily entered and thus to coerce employers. Against such action the employers were entitled to protection.

Post Office Department. Considerable interest was manifested in the attitude of Postmaster-General Burleson toward the organization of postal employees. Although President Wilson and other members of the Cabinet had shown great favor for the recognition of unions as a necessary condition to the preservation of industrial peace and efficiency in war time, and although the government had set up adjustment boards for all concerns doing work for the War and Navy Departments (see Arbitration and Conciliation, Industrial), Mr. Burleson strongly opposed the further developments of the postal service unions. His attitude was severely condemned by the American Federation of Labor (q.v.). Postal unions were permitted by act of Congress on August 24, 1912. Such employees were given the privileges of presenting grievances to Congress and affiliating with other organizations, but they were not allowed to strike. At various times they sent petitions to the postmaster-general, but these were not acknowledged; they sent delegations but these were not received. In his annual report Mr. Burleson accused the union officers of presenting "imaginary grievances," "distorting or misrepresenting the facts," and weakening loyalty and discipline. He charged that the unions were becoming bold; that he feared a strike in the future; and that this would be a revolutionary menace to the government. On the other hand, the unions claimed that they had received no advance in pay in ten years and that the increasing discontent with unprogressive management was the sole basis of the increasing insistence with which they pressed their grievances.

WOMEN. The National Woman's Trade Union League, under the presidency of Mrs. Raymond Robins, has actively aided the National Consumers' League in its propaganda for the universal eight-hour day and forty-eight hour week for women workers. It coöperated with Federal authorities in 1917 in the protection of women drawn into war trades (see WOMEN IN INDUSTRY). At its sixth annual convention at Kansas City, June 4-9, a resolution was adopted requesting the American Federation of Labor to include trade union women in its delegation to the International Labor Peace Congress at the close of the war. It was urged that the working women of all nations should convene in a similar congress and make known their unified demands for international standards for women workers. Other resolutions protested against limitations of the constitutional rights of freedom of speech, press, and assemblage; protested against the abrogation of labor standards during the war; demanded the conscription of wealth whenever men should be conscripted; favored vigorous efforts to extend labor organization; condemned the undercutting of American standards by coolie labor; and demanded equal pay for equal work regardless of sex. Owing to opposition of foreign governments, delegates from the British Women's Trade Union League, Australian and French women workers, and the Intersyndicalist Committee for Action against Exploitation of Women were not present.

The league opened in January, 1914, at Chicago, the School for Active Workers in the Labor Movement. This has been very successful. It trains students who either come of their own initiative, or are sent by local unions, or are selected by the league itself to become the active leaders in the organization of working women. There is an academic course of four months covering English, public speaking, court decisions, labor problems, economic history, elementary economics, and modern radical movements, and eight months' field work, including practical experience with many real problems. Some of the academic courses are taken at the School of Civics and Philanthropy and the University of Chicago.

GREAT BRITAIN. The labor movement in Great Britain is carried on through three federated bodies: Federation of Trade Unions, the Trade Union Congress, and the Labor Party. By all odds the most important organization is the Trade Union Congress, which held its forty-ninth annual meeting at Blackpool, September 3-8. This session was attended by 692 delegates representing 174 organizations with 3,068,992 members. Some of these organizations were themselves federations, so that a total of 260 unions were actually represented. The total membership comprised about 75 per cent of all members of the 1106 unions in the United Kingdom. Its aggregate membership was 8.3 per cent greater than in 1916, this increase occurring mainly among general laborers, railway men, and in the clothing and engineering trades. Among the principal subjects upon which resolutions were passed were the following, as reported in the September *Labour Gazette:* "An improved scale of war pensions; a proposed international labor and Socialist conference at Stockholm; joint action by all unions to secure an increase in wages; extension of the Trade Boards Act; reduction of working hours in all trades to forty-eight per week; the conscription of wealth; the machinery required in connection with the demobilization of the army and of munitions labor, and the reinstatement of the men in their old employment; reorganization of unemployment insurance; the practices employed by enemy submarine commanders; increased separation allowances, and increased pay to soldiers and sailors; free trade; the metric system; government control over food supplies and prices; the Russian revolution; compulsory military service; the Defense of the Realm Acts; the administration of the Liquor Control Board; educational reform; electoral reform; housing reform; enlargement of the powers of the Ministry of Labor; national ownership and control of land; the lowering of the income tax exemption level; and the nationalisation of canals and waterways."

CANADA. The Sixth Annual Report on Labor Organization in Canada covering the calendar year 1916 shows that the total union membership fell from 175,799 on December 31, 1913, to 143,343 on December 31, 1915, but rose to 160,407 on December 31, 1916. The increases in the latter year were most marked in the metal, clothing, and railroad trades, while the building trades showed no advance. There were 91 branches of international organizations in Canada, of which 84 were connected with the American Federation of Labor; these comprised 129,123 members. The most important centralized labor group in the Dominion is the Trades and Labor Congress.

The beneficiary disbursements made by 80 of the 91 international organizations, the other 11 having no beneficiary features, for 1916 were as follows: death, $7,708,000; unemployment and traveling, $106,000; strike, $2,811,000; sickness and accidents, $1,120,000; old age pensions, $461,000; other, $194,000; total, $12,500,000. With reference to military service, 1284 local unions reported 21,599 enlistments, besides 593 British reservists who had joined their regiments. These enlistments account for the decline in membership 1914-15. There was a noticeable lack of agreement on the question of the registration of the man power of the Dominion. The Trades and Labor Congress declared it to be the duty of labor to assist in every possible way in the prosecution of the war; but this Congress and the Canadian Federation of Labor opposed conscription for military service.

TRADING WITH THE ENEMY ACT. See FINANCIAL REVIEW.

TRANSPORTATION FACILITIES. See UNITED STATES AND THE WAR.

TRANSVAAL. One of the four original provinces of the Union of South Africa (q.v.).

Pretoria, the capital of the Union, is also the seat of the provincial government.

TRANSYLVANIA. A titular grand principality, forming the eastern part of Hungary. It is sometimes not regarded as a part of Hungary proper, as not much over one-third of the population is Magyar. Area, 22,318 square miles. The population, according to the census of December 31, 1910, was 2,678,367, as compared with 2,476,998 in 1900. In 1910, Rumanian was the mother tongue of 1,472,021 inhabitants (55.0 per cent); Hungarian, 918,217 (34.3 per cent); German, 234,085 (8.7 per cent). Of the population in 1910, adherents of the Orthodox Church constituted 29.6 per cent; Greek Catholics, 28.0; Reformed, 14.9; Roman Catholics, 14.0; Evangelicals (Augsburg), 8.6; Unitarians, 2.5; Jews, 2.4. The chief town is Kolozsvár (Klausenburg), which has a university, and which, after Budapest, is regarded as the most important intellectual centre in Hungary; it had in 1910 60,808 inhabitants. Other towns are: Brassó (Kronstadt), 41,056; Maros-Vásárhely, 25,517. It was the annexation of Transylvania that was Rumania's aim in entering the great war.

TREE, Sir HERBERT BEERBOHM. An English actor manager, born in London December 17, 1853. He died in London on July 2. He was one of the most versatile of English actors and considered by many the successor to Irving. He made his début in 1877 at the Globe Theatre in London. In 1884 he made a very successful appearance in *The Private Secretary*. From that time on he undertook the management of theatres, as well as continuing to act. From 1887 to 1896 he managed the Haymarket, where he produced among other plays, *Trilby*. In 1897 Tree opened Her Majesty's Theatre with *The Seats of the Mighty*, after having produced many successful plays. His fame rests chiefly on his elaborate production of Shakespearean plays, in most of which he played a leading part. A Shakespearean Festival inaugurated by him in 1905 was extremely successful. In 1907 he visited Germany at the invitation of Emperor William, but was not very enthusiastically received by the German critics. During his visit he was invested with the Third Class Order of the Prussian Crown. In 1909 he was knighted by King Edward. In 1916-17 he was in the United States, where he appeared in a Shakespearean repertoire, and in an adaption of Thackeray's *Colonel Newcome*. He made a brief tour of the country and returned to England in May, 1917. In 1913 he published *Thoughts and Afterthoughts*.

TRENCH FEVER. Pappenheim, of the British General Hospital No. 1, has been conducting researches to discover, if possible, the specific germ responsible for this disease. He has isolated an organism from a number of patients and has cultivated it on artificial mediums. The organism is found in the periosteum, and also around the blood vessels of the tibialis anticus muscle, but not in the muscle itself, where the pain of the disease is located. It has also been found in the blood in a few cases. The organism is described as disc-shaped, about one-thirtieth to one-fortieth the size of a red blood corpuscle, and stains with the Wright-Giemsa stain, heated with hematoxylin after being fixed with Zenker's solution, hot Azure 2 stain, Ziehl-Neelsen, and even with the hot weak carbol-fuchsin stain. It is significant that the micro-organism is also found in the stomach walls of the body louse, which would seem to involve these vermin in the communication of the disease.

Dr. Milton Mandel, medical director of the United States Army Base Hospital No. 12, describes the malady after having seen several hundred cases, but considers the character of infection as yet undetermined. He says also that the name is really a misnomer, since the disease develops in troops that have not been in the trenches and even in individuals who have only occasionally visited training camps and convalescent hospitals. According to Mandel the disease is a distinct clinical entity, and may be defined as "an acute infectious disease of unknown etiology and self-limited course, characterized clinically by cyclic febrile attacks, intense headache and backache, and pains over the tibiæ which are particularly severe at night." One attack does not confer immunity. After a slight indisposition, there is a sharp rise of temperature from 101° to 104° F., preceded by chilly sensations or a true rigor, and followed by the symptoms mentioned above. The fever declines in from one to three days to normal and then follows another similar febrile attack. The cycle may be repeated a number of times, but as a rule convalescence is established after the third rise. The skin pains often persist for months after all other evidences of the disease have disappeared.

TRIESTE. A crownland of Austria, consisting principally of the important Adriatic seaport city of Trieste. Area, 36.8 square miles. The population, according to the census of December 31, 1910, was 229,510, as compared with 178,599 in 1900; as estimated in 1914, 246,500. The city of Trieste had in 1910 160,993 inhabitants. In 1910 the number of Austrian subjects in the crownland was 190,913; of these, Italian was the vernacular of 118,959 (62.31 per cent); Slovenian, 56,916 (29.81 per cent); German, 11,856 (6.21 per cent); Croatian, 2403 (1.26 per cent). Of the population in 1910, Catholics numbered 217,846 (94.92 per cent); Evangelicals, 2472 (1.08 per cent); Orthodox, 1981 (0.86 per cent); Jews, 5498 (2.40 per cent). The crownland has a unicameral diet of 80 members and is represented by 5 members in the Austrian Reichsrat.

TRINIDAD AND TOBAGO. A British colony, composed of the West India islands of Trinidad (1754 square miles) and Tobago (114). Total population, 333,552 (110,911 East Indians). Estimated population March 31, 1914, 352,145. The capital is Port of Spain (56,796 inhabitants); San Fernando (8667) is 30 miles south of the capital.

TRINITY COLLEGE. A non-sectarian institution for the education of men at Hartford, Conn. In the fall of 1917 there were 166 students and 22 members of the faculty. Volumes in the library numbered 80,000 and there were also 45,000 pamphlets. Odell Shepard was appointed James J. Goodwin professor of English in 1917, the professorship having been established by a gift of $50,000 from Mrs. Goodwin. A bequest of $150,000 was also received from the J. P. Morgan fund. Productive funds in 1917 amounted to $1,617,992 and the income to $83,895. The college was founded as Washington College in 1823 by members of the Protestant

Episcopal Church and the name was changed in 1845. President, Flavel Sweeter Luther, LL.D.

TRIPOLI. See LIBYA.

TROTZKY, LEON. Russian ultra pacifist and, with Nikolai Lenine (q.v.), the leader of the Russian Bolsheviki. His real name is Leber Bronstein. He is about 40 years old. He established a paper in Russia more than 15 years ago and on account of his revolutionary ideas was often sent to jail. He was sent to Siberia from 1905 to 1912 for participation in revolutionary plots. After his release he went to Berlin, where he established a paper, but after the war broke out he was ordered to leave. He lived a short time in Switzerland, and then went to Paris, where he started a paper advocating peace. The Russian Ambassador had his paper suppressed, and he went to Spain, where he was arrested. After his release he came to New York City, where he became editor of the *Novi Mir* (*New World*), a Russian revolutionary paper published in that city. He was also prominent in radical circles on the East Side of that city. After the overthrow of Czar Nicholas he returned to Russia. For his activities during the Russian Revolution, see the article on RUSSIA, *History;* see also WAR OF THE NATIONS.

TRUCKS, MOTOR. See AUTOMOBILES.

TRUSTS. There were no spectacular developments in the regulation of combinations in restraint of trade during 1917, though numerous prosecutions were under way; on the other hand, the sentiment which had been developing from the outbreak of the European war in favor of permitting American manufacturers to combine in the development of the export trade culminated in the passage, in December, of the Webb Bill to conference committees of Senate and House. This bill authorized combinations of American manufacturers and traders for the purpose of developing export trade. With reference to prosecutions the attorney-general in his annual report for 1917, dated December 4, stated that there had been many complaints of alleged violations of the anti-trust laws in consequence of the abnormal advances in prices. He pointed out that such advances were subject to the regulation of the Department of Justice only when they resulted from combination or conspiracy of producers or middlemen. Those increases due to scarcity or to the "common selfish impulse of traders to take advantage of the extraordinary conditions of the times," and those advances due to purely local action were beyond his powers of regulation. However, the Bureau of Investigation of the department, its various agents throughout the country, and the Federal district attorneys had all coöperated vigorously to carry on inquiry as to the existence of grievances or conspiracy in restraint of trade. During the fiscal year 1917 18 cases were instituted—6 civil and 12 criminal; and 15 cases were settled—7 civil and 8 criminal. There were pending in December 37 cases—19 civil and 8 criminal. Of these 37 cases, 14 had reached the Supreme Court, including cases against the Reading Company, the Lehigh Valley Railroad, the International Harvester Company, the United States Steel Corporation, United Shoe Machinery Company, the Eastman Kodak Company, the Motion Picture Patents Company, the American Can Company, the Corn Products Refining Company, the Southern Pacific-Central Pacific Railway Company, and the Quaker Oats Company. Late in December it was reported that the government had decided to discontinue prosecutions until after the close of the war, because the reorganization of illegal concerns involved financial demands that would interfere with war financing.

CASES CONCLUDED. Cases had been instituted against associations of lumber dealers in Minnesota, Michigan, Colorado, and Wyoming. The case against Hollis and others in Minnesota was decided on August 10, 1917, the contentions of the government being sustained in every particular. It was expected that in view of this decision the other lumber cases would be settled by consent decrees. Another group of cases instituted in district courts in Iowa, Utah, and western Pennsylvania involved dealers in plumbing supplies. The Iowa and Utah cases decided in 1916 resulted in the defendants in the Pennsylvania case, the National Association of Master Plumbers and their State and local affiliations entering pleas of *nolo contendere*. They had been charged with "concertedly refusing to sell goods which they did not themselves install and refusing to install goods which they did not themselves sell." They were fined amounts aggregating $5265. An equity case against this same Pennsylvania group was not contested and a decree enjoining them from committing the acts complained of was entered on May 19.

Another group of cases which aroused national interest were two prosecutions of conspiracies to restrain the manufacture and shipment of munitions of war in and from the United States. These cases involved agents of the German government and were important factors in arousing the American people to a realization of the necessity of war. In the northern district of California was instituted a case against Franz Bopp, German consul general at San Francisco, and several others. The defendants were convicted and sentenced to one year in prison; Bopp and three others were in addition sentenced to pay fines of $5000 each. In the southern district of New York was instituted the case against Von Rintelen, Martin, Lamar, Buchannan, Taylor, Fowler, Schulteis, and Monnett. The first three of these were found guilty and sentenced to imprisonment of one year each. The case against Monnett was dismissed, and the jury disagreed with reference to the others.

The National Retail Monument Dealers' Association of America and certain officers and members were indicted in the United States District Court of Maryland for restraining commerce in monuments and memorials. Their method was to circulate so-called "honorary lists" of producers, manufacturers, and wholesalers who conspired to prevent so-called illegitimate retailers and ultimate consumers from securing these articles and who also agreed to purchase their own supplies of these articles only from persons on the lists. On September 12, 1917, the defendants entered pleas of *nolo contendere* and were fined amounts aggregating $6255.

The Woven Label Manufacturers' Association with headquarters at New York City and comprising nearly all the manufacturers of woven labels, hangers, tabs, and similar articles, adopted rules, regulations, and policies designed to control the entire trade in these articles from producers to consumers. The association adopted fictitious schedules of costs, fixed uniform prices and terms of sale, and maintained what was in effect a blacklist. A petition filed against them on October 8 resulted in an immediate agreed decree dissolving the association and the issue of an injunction enjoining the formation of a similar one.

The smokeless coal cases constituted another important set of prosecutions. Investigations in January and February, 1917, had shown that the Aileen Coal Company and others comprising 108 corporations and 59 individuals had entered into a combination to monopolize and raise the price of semi-bituminous or smokeless coal, known as New River coal and Pocahontas Coal. Also that the Algoma Coal and Coke Company and a large number of other corporations and individuals had sought to eliminate competition by selling their product through a common sales agency, Castner, Curran, and Bullitt. The investigation finally showed that the Baker-Whitley Coal Company and numerous other organizations and persons had sought to restrain trade in the so-called bunker coal. After trial of a month the defendants in the Aileen case were acquitted on July 12. A week later the government *nolle prossed* the Algoma case, it being similar to the foregoing. Since nearly one-half of the defendants in the Aileen case were also involved in the Baker-Whitley case their pleas of *autrefois acquit* were sustained by the court on July 20, and the indictments of the other defendants were dismissed.

The only other cases finally determined were the ocean transportation cases involving the Prince Line (Ltd.) and others, and the American Asiatic Steamship Company. These defendants were charged with an effort to monopolize ocean transportation between the United States and South America and Far Eastern ports respectively by means of pooling agreements, rebates, and other secret trade arrangements. The Federal District Court decided both cases adversely to the government, which appealed to the Supreme Court. On January 22 this court reversed the decrees of the lower court, but because the European war had effectively dissolved the agreements the cases were remanded to the lower courts with directions to dismiss the indictments without prejudice.

PENDING SUITS. The defendants in suits still pending in December, 1917, were as follows: The Association of Bill Posters of the United States and Canada; the Board of Trade of the City of Chicago; the Keystone Watch Case Company; the American Sugar Refining Company; Michael Artery et al., Michael Boyle et al., so-called business agents of Chicago labor unions who conspired to prevent the unloading of goods at that city, and to prevent the installation in Chicago of electrical appliances and lighting fixtures manufactured elsewhere; John D. Rockefeller and four other defendants in the New Haven case; Charles S. Mellen and others charged with conspiring to prevent the construction of railroad lines in New England by the Grand Trunk Railway Company; Isaac Whiting and others charged with seeking a monopoly of trade in milk in New England; the Booth Fisheries Company, charged with fixing the price of fish in certain parts of the country; the Western Cantaloupe Exchange and others; Cowell and others who were the officers and agents of nine cement manufacturing companies seeking a monopoly on the Pacific Coast (some of the defendants plead guilty on April 30 and were fined amounts totaling $10,000); the Pan-American Commission Corporation and a South American agent which sought a monopoly of sisal, widely used in the manufacture of binder twine; the Jensen Creamery Company and others of Idaho; Simpson and others charged with conspiring to fix the price of milk in the District of Columbia; Mead and others charged with fixing the price of newsprint paper and otherwise controlling its supply (see below); the Chicago Mosaic and Tiling Company which sought to restrain trade in wall and floor tiles; M. Piowaty and Sons who with others was charged with forming the National Onion Association to control the prices and supplies of onions; Gilman and other members of the Chicago Butter and Egg Board; the United States Fish Exchange and others; various bread and baking companies of the District of Columbia; Webster and other members of the National Association of Automobile Accessory Jobbers who sought to control the trade in automobile accessories by combination and lists of legitimate jobbers; Nash Brothers and others indicted in North Dakota for conspiring to regulate interstate trade in fruits of certain northwestern States.

SOUTH AFRICAN STEAMSHIP CASE. On March 16 the Supreme Court handed down an important decision in the case of Thomsen and others *v.* Kayser and others involving the legality of the South African Steamship Conference. This conference represented an arrangement for fixing freight rates and otherwise controlling shipments from the United States to Africa. The lines involved agreed to pay a commission of 10 per cent of the freight to shippers using their lines exclusively in both import and export trade. It was estimated that this arrangement gave the conference excess profits of about $1,500,000. The case had passed through the Federal Circuit Court and the Circuit Court of Appeals. The latter court had declared that whether the conference established a combination that was unreasonable restraint of trade was immaterial. The Supreme Court not only declared the combination illegal but severely condemned its maintenance of so-called "fighting ships," in order to cut rates, and other methods of unreasonable competition. The conference was declared to be an unreasonable monopoly under the Sherman Law and the decision of the Circuit Court of Appeals dismissing the case was reversed. The immediate importance of the case was reduced by the disorganization of shipping by the war. Its importance after the war, however, assuming a return of international trade to normal competitive conditions, is evident, since it might prevent such arrangements among American shipping companies as would make them most efficient in competition with other countries.

NEWSPRINT MANUFACTURERS ASSOCIATION. Early in the year there was complaint throughout the country of the extortionate prices of newsprint paper. The Federal Trade Commission, after investigation, reported in February that there was no real shortage of paper but that this association was securing unreasonable profits by means of combination. On March 3 the manufacturers agreed to permit the commission to fix prices. Five weeks later five members of the Executive Committee of the association and two other men were indicted at New York for conspiracy in restraint of trade, as above indicated. In late November an agreement was reached between the manufacturers who controlled nine-tenths of the newsprint paper of the country and the government in the Federal District Court whereby the five members of the Executive Committee entered a plea of *nolo contendere* and agreed to a decree finding the association an unlawful combination. Four of these defendants were fined $4500 and another $1000. An extensive agreement was entered into for the regulation of prices of various grades and sizes and a plan for the readjustment of prices for many months in the future was worked out. The Federal Trade Commission was constituted the price-fixing authority. Discontent, however, still manifested itself as was shown by subsequent attacks upon the Newsprint Manufacturers Association in Congress and the allegation that illegal profits of millions of dollars were still being secured.

Beef Packers. The Federal Trade Commission made numerous investigations throughout the year into the handling of articles for which the demand had been unusual in consequence of the war. It made a special recommendation to Congress that large appropriations should be made for thorough investigation of trade in numerous such articles. The commission itself undertook as its most important investigation the alleged conspiracies of the Armour, Swift, and other meat-packing interests centring at Chicago. The agents of the commission were in October, November, and December investigating the activities of the packers in Boston, New York, Philadelphia, Chicago, Kansas City, St. Louis, and other important cities. Mr. Francis J. Heney, a well-known attorney of San Francisco, was the special council of the commission in charge of this investigation. He alleged that the packers had secured a monopoly of the Chicago stockyards and other terminal facilities in western cities thus making themselves a buyers' monopoly of live stock; they had monopolized the shipping facilities of fresh meat; they also exerted extensive control over the handling of fruits, vegetables, and dairy products, and were thus in a central position as regards the control of much of the nation's food supplies.

Colgate and Company. An interesting proceeding was the indictment in December at Norfolk, Va., of Colgate and Company, manufacturers of perfumery, soap, and toilet preparations. The ground of the indictment was that this company required dealers, both wholesale and retail, to handle its products at fixed prices, and refused to sell to dealers not carrying out this plan of distribution. The Department of Justice offered the company the alternative of abandoning this plan or being subject to prosecution under the anti-trust law. The company did not deny the practice, but admitted that it had pursued this policy for forty years, that it believed the policy fair to dealers and the public, and was prepared to carry the matter to the highest court.

TUBERCULIN. Moro's technic of administering tuberculin has been reviewed by Blumenau. He applied the method, slightly modified, in seventy children. The most effectual technic was to apply a drop of pure tuberculin to the forearm and then shave off a small piece of epidermis with a razor, cutting through the drop of tuberculin. The skin and tuberculin formed a thin salve on the back of the razor, and this mixture was rubbed into the skin until dry. The dose was gradually increased to four drops at intervals of five days. The results in cases of well-defined tuberculosis in the lungs were negative, but in incipient or occult tuberculosis the therapeutic results were prompt and striking. Blumenau believes that particularly in children certain subjective symptoms are due to infection by tubercle bacilli and occur before tuberculosis is really manifest.

TUBERCULOSIS. There is noted among sanitarians an alarming increase in deaths from pulmonary tuberculosis in the various belligerent countries concerned in the European War, not so much among the soldiers as among the civil population. The factors at work are poverty, worry, malnutrition, overcrowding, and overstrain, both physical and mental, even in communities where high wages, paid to workers in munition factories and other war industries, have brought a relatively high degree of prosperity to the civil population. Long hours, monotonous work, and chronic physical weariness have an influence on raising both the morbidity and mortality. In Great Britain it has been particularly noticed that girls between fifteen and twenty years old who are nobly filling the gaps caused by the absence of men at the front, have suffered very heavily from tuberculosis.

To France a special mission has been sent by the Rockefeller Foundation to organize a campaign against the spread of "the white plague," and it is planned to establish in Paris and several large provincial towns completely equipped organizations consisting of dispensaries, clinics, and laboratories. Another part of the mission's work will be the affording of assistance; and a third section will be publicity, providing traveling exhibitions, meetings, and other means of distributing knowledge to the public. Endeavors to perfect the complement fixation test for tuberculosis were continued during 1917, although results obtained differ considerably, due probably to the fact that the antigens used by different laboratory workers have been prepared by widely divergent methods. The first issue of a new monthly publication to be known as the *American Review of Tuberculosis*, appeared in 1917. It is to be the organ of the National Association for the Study and Prevention of Tuberculosis. Dr. Edward R. Baldwin, of Saranac Lake, N. Y., is the editor-in-chief, and Dr. Allen K. Krause, of Baltimore, is the managing editor.

TUBERCULOSIS IN ANIMALS. See Veterinary Medicine.

TUFTS COLLEGE. A non-sectarian institution of learning, co-educational in some of its departments, at Medford, Mass. In the fall of 1917 there were 1645 students and 309 members of the faculty. The library contained 75,000 bound volumes and 67,000 pamphlets. Productive funds in 1917 amounted to $1,588,084 and the income to $78,726. During the year $48,886 in gifts were received. The college was founded in 1852. President, Hermon Carey Bumpus, Ph.D.

TULANE UNIVERSITY. A non-sectarian institution for the education of men at New Orleans, La. In the fall of 1917 there were 2727 students enrolled in all departments and 314 members of the faculty. Volumes in the library numbered 72,481. Productive funds amounted to $4,174,778 and the income therefrom to $219,719. During the year about $40,000 was received in gifts. A two-year course preliminary to the study of medicine went into effect at the opening of the fall 1917 session at the completion of which and the first two years in the medical school, students will be granted the degree of bachelor of science. Since the opening of the war classes have been organized in marine engineering, radio-telegraphy, conversational French, and naval architecture. The university was founded in 1834. President, Robert Sharp, Ph.D.

TUNGSTEN. See CHEMISTRY, INDUSTRIAL, *Metals*.

TUNIS. A French protectorate in North Africa lying between Algeria and Tripoli. Capital, Tunis, with 164,608 inhabitants. Total area, 167,400 square kilometres (64,600 square miles); population, 1,706,830 indigenous Arabs, Berbers, Moors, etc., 49,245 Jews, and about 149,000 Europeans. Population figures are estimates.

By the treaty of 1881, French control over Tunis is to obtain until the local government is declared by both sides entirely capable of orderly administration. A French resident-general governs the country under the direction of the foreign office. The reigning bey receives an annuity of 940,000 francs; in addition, 750,000 francs are granted to the royal princes.

TUNNELS. During 1917, the first subaqueous soft-ground tunnel built of segmental concrete blocks was completed at Cleveland, Ohio. This work was of interest as showing that a radically new form of tunnel construction was feasible and that the tunnel builder had at his disposal a new resource for future construction. In fact, in the discussion of the proposed large size tubes for vehicular traffic under the Hudson River at New York, this same form of construction was recommended by a prominent engineer, in what was likely to be one of the most remarkable and difficult river tunnel projects ever to be attempted.

Tunnel construction about New York by 1917 had become almost commonplace in view of the rapid transit development around that city. Nevertheless, four shield tunnels at New York were driven through the hazardous river-bottom soil with complete success, and the entire work was regarded almost in the nature of routine construction. It was but a few years previously that work of this kind would have suggested such dangers and difficulties that overcoming them would have been considered an extraordinary achievement in engineering.

In 1917 the prospects of a vehicular tunnel under the Hudson River were considerably brighter, inasmuch as by that time the counties of Essex, Hudson, and Bergen had made appropriations towards the establishment of a permanent New Jersey Bridge and Tunnel Commission to act in conjunction with a similar commission in New York State. Accordingly, it seemed certain that the question of intimate connection between these two States would receive a comprehensive and minute study, although in view of the war and the financial situation it was extremely doubtful as to what definite measures would be taken. A notable plan for such a tunnel was proposed by a board of engineers consisting of Professor William H. Burr, Ralph Modjeski, and Daniel E. Moran and submitted on January 30 to the Public Service Commission.

The New York Harbor Board of Engineers set 50 ft. below mean low water between the pier headlines as the minimum depth, and the sectional method of tunnel building, as followed in the construction of the Detroit tunnel and under the Harlem River on the New York subway, was adopted as a system more economical than the shield method. Various elements of the construction were considered in the preparation of the report, and the difficulties were believed to be in no way insurmountable.

An interesting development in tunnel construction was noted in the construction of the Wilson Avenue water-intake tunnel at Chicago. This tunnel was of notable length, namely, eight miles, with three miles under the lake, and was in solid rock. The use of rock derived from the tunnel in making the concrete with which the tunnel was lined was a distinct innovation, and it was found that portable rock screens and pneumatic mixers could be used for this work. The excavated rock was a good limestone which was screened and the rejected portion placed on a car and hauled out of the tunnel. A pneumatic mixer with air tanks and measuring hopper was employed and the whole outfit was mounted on narrow gauge tracks. A considerable saving of time was secured, and it was found that the concrete work could be carried on much faster than the excavation.

On June 20, the last of the East River tunnels under construction in New York City was completed and the final blast fired by the chairman of the Public Service Commission. See RAPID TRANSIT.

A Japanese Corporation was being organized during the year with a capital of $7,228,250 for the purpose of constructing the railway tunnel under the Mogi Straits, starting at Shimonoseki and ending at Dairi, Fukuoka Prefecture. This tunnel would connect with the main trunk line of Kiushu. The total length was estimated at 17,700 feet, of which 4000 feet would be beneath the sea. The time of construction for the entire project was estimated at five years.

TURBINES. See STEAM TURBINES.

TURKEY, or the OTTOMAN EMPIRE. A monarchy in southeastern Europe and southwestern Asia, theoretically governed by Mohammed V, the self-indulgent, degenerate sultan with epileptic tendencies. Actually, Turkey's alliance with the Central Powers has made her the creature of Germany, who has wielded her powers, officered her army, directed her policies, and made use of her brutalities in the interests of the Imperial German Empire. Capital, Constantinople.

AREA AND POPULATION. Out of the former European area of 169,300 square kilometres, or 65,367 square miles, carrying a population estimated at 6,130,200, Turkey retains only 26,100 square kilometres, or 10,882 square miles, with 1,891,000 inhabitants (Constantinople vilayet, 1505 square miles, and 1,203,000 inhabitants; Chatalja mutessarifat, 733 and 78,000; Adrianople vilayet, 8644 and 610,000). Mohammedans preponderate in this territory. The city of Constantinople has 942,900 (with suburbs 1,200,000) inhabitants; Adrianople has 123,000. The great divisions with their area and estimated population are shown in the table below, with density per square kilometre:

	Sq. Km.	*Pop.*	*D.*
European Turkey	26,100	1,891,000	72
Asia Minor	501,400	9,089,200	21
Armenia and Kurdistan....	186,500	2,470,900	13
Syria and Mesopotamia....	637,800	4,288,600	8
Arabia	441,100	1,050,000	8

Albania, lost to Turkey at the end of the Balkan Wars, is a name given to an indeterminate area embracing the old vilayets of Scutari and Janina, with portions of Kossovo and Monastir; Macedonia comprehends the old vilayet of Saloniki, the eastern (and larger) part of Monastir, and southeastern Kossovo.

Anatolia is almost identical with Asia Minor. The Armenian Christian population in this region numbered normally 650,000 but the 1915-16 systematic policy of massacres *en masse* has practically wiped them out. Mohammedans predominate elsewhere.

The American Committee for Armenian and Syrian Relief, through its secretary, C. V. Vickrey, gave out a cablegram, February 23, 1917, received from Lord Balfour, which said in part: "Of the 1,800,000 Armenians who were in the Ottoman Empire two years ago, 1,200,000 have been either massacred or deported. Those who were massacred died under abominable tortures, but they escaped the longer agonies of the deported. Men, women, and children were driven from their homes and made to march as long as their strength lasted or until those who drove them drowned or massacred them in batches. Some died of exhaustion, some survived a journey of three months and reached the deserts and swamps along the Middle Euphrates. There they have been abandoned and are dying of starvation, disease, and exposure. A recent report tells of a group of survivors at Abu Herrera, mostly women, children, and a few old men, who had been without food for seven days. Some few, less than a tenth of the Armenians who were in the Ottoman Empire in April, 1915, fled across the frontier to Caucasia or Egypt. This bare recital of facts reveals the hideous cruelty of which they have been the victims." See RELIEF FOR WAR VICTIMS.

The Hejaz (250,000 square kilometres, 300,000 inhabitants), a province in Arabia, revolted in 1916 against the Turks and declared itself an independent kingdom under the Grand Sherif (Hussein) of Mecca. Turkish rule in other parts of Arabia, always resented, is weakening with the progress of the war. The mutessarifat of Jerusalem (captured by the British in 1917) covers 17,100 square kilometres, with 341,600 inhabitants.

Principal cities, with population, are given in the 1916 YEAR BOOK, where a sketch of the country's natural resources will also be found.

THE BAGDAD RAILWAY. In a lecture before the Lowell Institute, the English traveler, H. C. Woods, F.R.G.S., says: "The Bagdad Railroad may be called the backbone of German power in Asiatic Turkey. Constructed as a prolongation of the Anatolian railways, which were opened as far as Konia in 1896, the Bagdad Railroad has been gradually constructed, as the result of a concession given to Germany in 1903. At the present time it is possible to start from Constantinople and travel by train right across the table land of Asia Minor, through the Taurus Mountains, along the plains of Cilicia, through the Amanus range across the Euphrates and at last as far as Helif.

This place lies about two-thirds of the way between the Euphrates and the Tigris. There the facilities for travel have only been available for the last few months, for, while the Amanus tunnel was completed in 1915, the Taurus tunnels were pierced only last year. These additional travel facilities are most important as far as Mesopotamia is concerned, for there are now at most only 200 miles of distance which cannot be traveled either by train or by boats floated down the Tigris from Mosul.

"In regard to Syria these travel facilities are most important, for the great southern arm of the Bagdad Railroad leaves it near Aleppo and runs in a southerly direction through Damascus as far as a point called Deraia Junction. From this point the Hejaz Railroad continues south on the east of the River Jordan as far as Medina. The other line turns from Deraia first in a westward direction and then southward, passing between Jaffa and Jerusalem, and going as far as the Egyptian-Turko frontier."

NAVY. A German admiral (von Souchon) controls the navy theoretically under supervision of Djemal Pasha, whose permission, however, he easily disposed with when he sailed away with the Turkish fleet to the Black Sea to bombard Russian ports. He came first into Turkish waters with the third-class German cruiser *Breslau* and the big German battle cruiser *Goeben*. The *Goeben* was launched in 1911, was of 22,640 tons, 610 feet long, 96¾ feet beam, and had a speed of 28½ knots an hour. She carried, when in the German navy, ten 11-inch guns, twelve 5.9-inch guns, twelve of 3.4 inches, and had four torpedo tubes. Her full complement numbered 1025 men. The *Breslau*, launched in the same year, was of 4550 tons, with a complement of 373 men. She was 440 feet long and 43 feet beam and could make 24½ knots an hour. She was armed with twelve 4.1-inch guns and had two torpedo tubes.

They arrived at Constantinople in August, 1914. Protests were made by Great Britain, and Turkey replied that the cruisers would be interned. Soon, however, the Turks began to justify their harboring of the warships on the grounds that the British had taken over two Turkish vessels which were being built in England. Later it was announced that Turkey had purchased the cruisers and renamed them the *Sultan Yavaz Selim* (*Goeben*) and the *Medillieh* (*Breslau*). In an encounter at the entrance to the Dardanelles after the close of the year, the British sank the *Breslau* and the *Goeben* escaped but was beached; and British aircraft continued to bombard her.

COMMERCE. A table of Turkish trade for two years follows, value in thousands of pounds Turkish:

	Imports		*Exports*	
	1911-12	*1913-14*	*1911-12*	*1913-14*
United Kingdom ..	9,946	8,129	5,977	4,660
Austria-Hungary ..	6,839	6,147	3,461	2,281
France	3,939	3,592	4,684	4,289
Germany	5,163	4,689	1,514	1,227
Russia	3,041	3,517	949	831
Bulgaria	1,462	270	684	251
Rumania	1,229	1,937	607	227
Greece	285	137	489	244
Italy	2,457	2,699	554	927
Netherlands	816	623	418	389
Egypt	997	1,431	1,697	1,943
United States	1,226	1,080	1,525	1,379
Total..........	45,009	40,810	24,719	21,436

Finance. In pounds Turkish are shown below estimates for revenue and expenditure for comparative years:

	1915-16	*1916-17*	*1917-18*
Revenue	25,996,010	22.961,680	25,584,155
Expenditure ...	35,657,540	62,039,236	53,014,551

The net revenue in 1913-14 available for the service of the debt was £T5,382,472, compared with £T4,536,605 in 1912-13. The condition of the Turkish debt was as follows in April, 1914: Secured on Egyptian tribute, £T17,981,106; unified and lottery bonds secured on ceded revenues, £T47,936,721; other funded debt (including 1914 loan of £T22,000,000), £T85,738,180; total, £T151,656,007.

Of the total debt, France holds 62 per cent and Germany 29 per cent. The amount borrowed by Turkey from the reëstablishment of the Constitution down to the present date is £T55,488,326, of which £T47,540,012 was required to meet deficits (due to pre-constitutional borrowing) and £T7,948,304 for railways. Since the beginning of the war Turkey has received advances from the Central Powers amounting to £T79,000,000 repayable not later than eleven years after the war. The total war expenditure of Turkey to March 31, 1917, is placed at £T132,000,000.

Government. The sultan Mohammed V was proclaimed April 27, 1909. The heir-apparent, Yussuf Izzedin (born 1857), an opponent both of Enver Pasha and of the Imperial German government, was either murdered or forced to commit suicide, in the year 1917. The cabinet appointed, February 5, 1917, was as follows: Grand Vizier and Minister of the Interior, Talaat Pasha, Pan-Turk; Foreign Affairs, Ahmed Nessimi Bey; Justice and President of the Council of State, Halil Bey; War, General of Brigade, Enver Pasha, darling of the Young Turks and of the German militarists, son of an obscure employee of the Roads and Bridges Board and of a "layer-out" of corpses in Stamboul; Marine, Djemal Pasha, bitter enemy of Enver Pasha, secretly anti-German, author of the Syrian massacres, grandson of the official hangman in the service of the sultan Mahmud; Public Instruction and Minister of Posts and Telegraphs, Shukri Bey; Finance, Djaved Bey; Public Works, Ali Munif Bey; Mines, Forests, Agriculture, and Commerce, Sherif Bey; Sheikh-ul-Islam, and Minister of Pious Foundations, Mussa Kiazim Effendi.

History. Few authentic details of the internal history of Turkey during the year were available. As to Turkey's part in the war, see War of the Nations. The following account of the new Pan-Turanian movement in Turkey appeared in the press, and it was to have been hastened by the Russian revolution: The movement originated on the banks of the Volga and its earliest promoter was a Tartar named Aktchoura Oghlou, who in 1904 belonged to the party known as Cadets and chose Kazan for his field of action. The Turanian family in Russia, according to the census of 1907, was represented by 17,669,000 persons, of whom 13,601,000 were Moslems speaking Turkish dialects. Their number was said to have increased since then to twenty millions. Their aim was to bring about the absorption of this Turkish mass of people in the Turkish Empire. The territory that they desired was a strip along the banks of the Volga. To further this end a powerful society was founded at Constantinople. After the Turkish revolution Oghlou was permitted to found two organs to propagate the movement. The association spread from Constantinople into Thrace, Macedonia, the Caucasus, and even Turkestan. It absorbed those elements which especially aimed at nationalizing Turkey, including high officers in the government and in the military and naval services. None but Turks bearing Turanian names were permitted to join it. A Turk who bore the name of another racial stock was obliged to change it in order to become a member. It received a considerable sum from the government in subsidies. From the beginning of the war this society, known under the name of the "Turkish Hearth" (Turk-Ogdaghi), endeavored to extend its influence throughout the whole national life in matters social and intellectual as well as religious and political. It established four sections: (1) A group concerned especially in linguistics; (2) a group for the discussion of historical and scientific matters; (3) a group whose aims were political, and (4) the so-called "Turkish Force," which gave its attention to physical education. There had already existed for a long time a Turkish school which sought to free itself from the Perso-Arabic tradition. This developed to such a point that its principles became practically dogmas and its opponents were treated as traitors and threatened with death. The grammar and style of writing were altered, the old Turkish Tartar vocabulary was restored and the language took on its primitive character. Thus, by drawing together the various dialects still existing or obsolete, a new literary language was created to serve as a bond of union among the people that should constitute the future Turanian confederation. Similar measures were taken in the domain of manners and customs. Old forms of dress were revived. So also were old songs, the national comedy, and old names. At the military schools the young officers began to study the tactical methods of the Mongols. Many clubs were opened where women came three times a week to learn of the national education which should bring in a new generation. As a sign of this nationalism the Pan-Turanians went so far as to take as their drink the ancient "kumyss" or fermented mare's milk which had been the beverage of the Asiatic steppes. In short the movement tended to a complete concentration of a new, well-fused national political body on the basis of common race and common tongue and to route out by fire and sword anything that impaired this unity.

TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE. A non-sectarian co-educational institution for negroes, located at Tuskegee, Ala. In the fall of 1917 there were about 1600 students and 200 members of the faculty. Volumes in the library numbered 24,894. Productive funds in 1917 amounted to $2,312,149 and the income therefrom to $111,060. The institute was founded in 1881. President, Robert Russa Moton, LL.D.

TYLOR, Sir EDWARD BURNETT. The dean of English anthropologists, died January 2, 1917. He was born in London, October 2, 1832, and was educated at Grove House School, Tottenham. After traveling a year in the United States he went to Mexico in 1856 with Henry Christy and in 1859 published his observations in *Anahuac, or Mexico and the Mexicans,* notable for accuracy of description. In 1865 his *Researches into the Early History of Mankind* was published; in 1871 appeared his *Primitive Culture,* in 1881 *Anthropology,* and in 1900 *The Natural History of Religion.* Anthropological science is greatly indebted to these researches. Tylor's most important scientific contribution was his treatment and development of the doctrine of animism as the fundamental and universal factor in primitive religions. From 1896 until his retirement he was the first professor of anthropology at Oxford University. In 1912 he was knighted.

TYPHOID FEVER. The *Journal of the American Medical Association* presented its fifth annual survey of typhoid fever conditions in sixty cities having a population of over 100,000. With the exception of a few cities which suffered from epidemics during 1916, due to infected water, milk, or food, there is a general improvement in the situation over previous years and commendable activity on the part of health authorities in those communities having a high death rate to find the cause and remedy. Cambridge, Mass., heads the list with the remarkably low rate of 0.9 per 100,000, while Birmingham, Ala., brings up the rear with a rate of 42.6 per 100,000. The cities, as heretofore, are divided into five groups according to their population. The first group comprises nine cities with a population of over half a million. The mortality per 100,000 was as follows: Boston, 3.5; New York, 3.8; Chicago, 5.2; Cleveland, 5.3; Philadelphia, 7.8; Pittsburgh, 8.6; St. Louis, 9.4; Detroit, 15.0; Baltimore, 18.0. The number of deaths in this group was 854 in a total population of 13,743,746. Group 2, comprising cities having a population of between 300,000 and 500,000, had a death rate as follows: Seattle, 3.0; Los Angeles, 3.1; Cincinnati, 3.4; San Francisco, 3.4; Newark, N. J., 5.3; Minneapolis, 5.8; Buffalo, 10.9; Washington, D. C., 12.6; Milwaukee, 14.9; New Orleans, 23.4. The number of deaths was 344 in a total population of 4,053,281. The relatively high mortality in Milwaukee was thought to be due to ineffective chlorination of the water supply or to the addition of sodium thiosulphate to neutralize the taste of the chlorin in the water. Group 3 includes cities with a population of from 200,000 to 300,000 and shows the following mortality rate: Portland, Ore., 4.6; St. Paul, 4.9; Providence, R. I., 5.1; Rochester, N. Y., 5.1; Jersey City, N. J., 6.8; Denver, 7.2; Louisville, Ky., 9.7; Kansas City, Mo., 10.6; Columbus, Ohio, 13.4; Indianapolis, 26.6. These cities had a population in 1916 of 2,635,983 and the total number of deaths was 248. Group 4, comprising cities with a population of 125,000 to 200,000 shows mortality rates as follows: Paterson, N. J., 1.4; Spokane, Wash., 2.0; Worcester, Mass., 3.7; Oakland, Cal., 4.0; Omaha, 5.1; Scranton, Pa., 5.4; New Haven, Conn., 8.0; Fall River, Mass., 10.9; Syracuse, N. Y., 12.2; Atlanta, Ga., 17.9; Toledo, Ohio, 22.9; Richmond, Va., 24.1; Memphis, Tenn., 36.3; Birmingham, Ala., 42.6 The total population was 2,250,991, the number of deaths, 330. Group 5, comprising cities having a population of 100,000 to 125,000, gives the following: Cambridge, Mass., 0.9; Tacoma, Wash., 3.5; New Bedford, Mass., 4.2; Springfield, Mass., 4.7; Trenton, N. J., 6.3; Hartford, Conn., 6.3; Albany, N. Y., 7.7; Bridgeport, Conn., 9.0; Salt Lake City, 10.2; Camden, N. J., 11.3; Lowell, Mass., 11.4; Dayton, Ohio, 14.7; Grand Rapids, Mich., 15.6; San Antonio, Texas, 16.9; Reading, Pa., 18.7; Nashville, Tenn., 27.3; Dallas, Texas, 27.5. Total population, 1,983,918; number of deaths, 295.

Classification of the above communities according to their mortality rate shows that there were 16 cities with a rate below 5 per 100,000; 19 cities with a rate between 5 and 10 per 100,000; 17 with a rate between 10 and 20; and 8 with a rate of over 20 per 100,000.

TYPHUS FEVER. The occurrence of this scourge among the troops engaged in the European War has served to focus a great deal of scientific attention upon it. The disease has been studied in Serbia, Bulgaria, Austria, and Russia and also in Mexico, Algeria, and Morocco. The intimate association of the bacillus, discovered by Plotz and named by him *B. typhi-exanthematici,* appears to be clearly established, but there are certain points in regard to the disease that have not yet been cleared up, particularly in the line of prophylaxis, by administering serums and vaccines.

Prowazek and several other German observers have recently described certain minute bodies in the digestive tract of lice which have bitten typhus patients. These bodies are described as reddish, short, elliptic, and coccus-like, sometimes showing polar staining. Ricketts and Wilder in 1910 discovered similar polar staining bodies in infected lice while studying Mexican typhus (Tabardillo), and they have been named by Rocha-Lima. *Rickettsia prowazeki.* These organisms are found most plentifully in lice biting typhus patients during the height of the febrile attack. Toepfer and Schussler found that there was a rich development of *Rickettsia* in lice biting typhus fever patients. Rocha-Lima found only a superficial resemblance between them and the Plotz bacillus, but Raehr and Plotz appear to regard the two bodies as identical. Preventive vaccination, with the serum prepared by Plotz and administered in various institutions in the Balkans during the winter of 1915 and 1916, appears to have given more than satisfactory results.

TYROL. A variant of Tirol (q.v.).

UGANDA PROTECTORATE. A British protectorate in East Africa. The area cannot be stated with accuracy; up to the fifth parallel of north latitude, it is estimated at 121,437 square miles, including 16,377 square miles of water. The protectorate is divided into five provinces—Rudolph, Eastern, Northern, Western, and Buganda. The population, as estimated March 31, 1914, was 2,909,122; March 31, 1915, 2,927,494, consisting of 2,923,031 natives, 2560 Asiatics, and 903 Europeans.

UKRAINE. EXTENT AND POPULATION. The Ukrainians, who are also known as Malorussians, Little Russians, and Ruthenians, belong to the western Slavic group of nations. Their chief seat is in the Russian provinces of Podolia, Volhynia, Kiev, Poltava, Chernygov, Ekaterinoslav, and Kharkov, and parts of the adjoining provinces. The Ukrainian ethnographic area also includes the adjacent Austro-Hungarian territory, viz., East Galicia, the northwest of Bukowina, and a portion of Hungary along the slope of the Carpathian Mountains, from Marmaros to Zips. Their number is estimated as thirty million in Russia, upwards of three million in Austria-Hungary, and about one million in other countries. The Ukrainians in Russia are of Greek Orthodox faith, and those in Galicia are mostly Uniates. Notwithstanding local variations, the Ukrainians are easily distinguished from the Great Russians (or Russians proper) by their taller stature, broader and shorter heads, and darker complexion. They grow no beards as do the Russians. Livelier, gayer, and gentler than the latter, the Ukrainians are noted for their poetical and musical gifts. The Ukrainian peasant is said to be more self-reliant than the Russian.

EVENTS OF 1917. The dethronement of Czar Nicholas II (see RUSSIA, *History*) brought about a general upheaval, and numerous meetings and local congresses were held in the spring of 1917 in preparation for a general assembly at Kiev to be made up of representatives of all classes and interests. In April this Congress (Rada) demanded autonomy for Ukraine and proposed the establishment of a democratic republic. Many Ukrainian regiments were created, which declared their willingness to support the new government, and the plans for the organization of the Ukrainian republic took shape rapidly. They included a separate cabinet with distinct ministries of war and external affairs, and this gave alarm to the Russian provisional government (the Lvov Cabinet), which sent two Ukrainian members, Messrs. Terestchenko and Tseretelli, to Kiev for investigation and report. On July 15 they presented before the Russian cabinet what amounted to an ultimatum: Russia was to recognize complete autonomy for Ukraine, or total separation would ensue. This brought about the resignation of several Constitutional Democrats in the Russian cabinet. While objecting to full Ukrainian autonomy on the ground that it would seriously injure the campaign against the Central Powers, the provisional government accepted the principle of autonomy, and favored the attaching of Ukrainian delegates to the Russian war ministry and the military staffs. But the carrying out of the terms of this proposal was fraught with new difficulties, the Ukrainians being apprehensive lest they lose control of their troops, while their territorial demands seemed excessive to the provisional government of Russia. It was proposed that the purely Ukrainian provinces (Kiev, Volhynia, Poltava, Podolia, and part of Chernygov) come under the immediate supervision of the Ukrainian secretariat general, the disputed provinces to declare their own preference. In August the secretariat general or Ukrainian cabinet included the following members: Premier and Secretary of Internal Affairs Doroshenko; Secretary of Justice, Vinichenko, who later headed the cabinet; Steshenko (Education); Savchenko-Vilski (Agriculture); Veselovski (Trades and Industry); Tugan-Baranovski (Finance); Zarubin (National Affairs), with Associate Secretaries Mickiewicz for Polish, Silberfarb for Jewish, and Shulgin for Ukrainian Affairs.

In addition to military and economic difficulties which confronted Russia as a whole, the Ukrainian government had to reckon with the Russian government, on which it was dependent for financial support, and was hard pressed on the east by the Cossack armies of General Kaledin (see RUSSIA). In November the Rada was reported to have sent an army against this enemy. The principles of the Bolshevik party, which by this time had assumed control of the Russian government, did not find favor with the Ukrainian nationalists, nor with the peasants who looked to their government for a solution of the land problem. (There are few industrial workers in Ukraine.) The Bolsheviki having refused to advance money to Ukraine, the latter retaliated by an embargo on foodstuffs destined for northern Russia, and began to issue its own notes. There followed massing of troops on both sides and clashes in Odessa and elsewhere in the latter half of December. Towards Christmas, after an exchange of ultimatums, the Ukrainian government announced the capture of the staff headquarters of the fourth, eighth, and eleventh (Russian) armies on the Rumanian front, and disarming of Bolshevik forces. Cessation of hostilities was urged by the Bolsheviki, who feared an alliance between the Kaledin and Ukrainian forces. The Ukrainian demands included full recognition of a Ukrainian republic, participation in all peace negotiations, military control of the Ukrainian, southwestern, and Rumanian fronts, and guarantee of payment for foodstuffs. See RUSSIA; WAR OF THE NATIONS.

ULTRA-VIOLET RAYS TREATMENT. See WATER-WORKS AND WATER PURIFICATION.

ULUGH BEG, CATALOGUE OF STARS BY. See CARNEGIE INSTITUTION OF WASHINGTON.

UNEMPLOYMENT. Like its immediate predecessor the year 1917 was notable for the almost complete absence of extended unemployment. On the contrary, there were in the United States, as in other belligerent countries, repeated reports of a scarcity of labor. This was due both to the drafting of millions of men for military service and also to the intense energy of industrial activity (see FINANCIAL REVIEW; and LABOR). There was a recruiting of thousands of women to new industrial employments (see WOMEN IN INDUSTRY) and a tendency to resort more and more to child labor (q.v.). Even the small agitation existing in the early part of 1916 in behalf of unemployment insurance was lost sight of in 1917 (see SOCIAL INSURANCE). The extraordinary industrial problem, however, confronting the United States after its entrance upon active hostilities brought clearly to the foreground the necessity of a more thorough organization of the machinery for bringing idle labor and empty positions together.

CONSTITUTIONALITY. In 1914 through popular initiative the State of Washington enacted an Employment Agency Law. This law declared the system of collecting fees from workers for furnishing them with employment resulted in extortion and imposition and that consequently "it shall be unlawful for any employment agent to demand or receive from any person seeking employment any remuneration or fee whatsoever." Injunction against the enforcement of this law was immediately sought on the ground that it conflicted with the fourteenth amendment protecting property rights. On appeal the case finally reached the Supreme Court of the United States which rendered its decision on June 11, 1917, declaring the law unconstitutional by a vote of 5 to 4. The substance of the majority opinion was that in depriving the employment agencies of all fees such agencies were practically destroyed. "You take my house when you do take the profit that doth sustain my house; you take my life when you do take the means whereby I live." Moreover, Justice McReynolds, who wrote the majority opinion, declared that the employment agency business, far from being dangerous to the public welfare, was useful and commendable; that any abuses connected with them should be hedged about by proper regulations; and that consequently the law was arbitrary and oppressive because it unduly restricted liberty of appellants to engage in a useful business.

Those dissenting were Justices McKenna, Brandeis, Holmes, and Clarke. Justice McKenna declared that the law was a valid exercise of the police power against a demonstrated evil. Justice Brandeis pointed out that if decision were to be based upon established facts it seemed clear that the people of Washington considered the collection of fees by private employment agencies a social injustice and the elimination of such establishments was a constructive measure in dealing with the problem of unemployment. He also pointed out that the law was held constitutional by the Supreme Court of Washington and by the Federal District Court, both of which were presumably familiar with local conditions.

Two-thirds of the States have laws regulating to some extent private employment agencies. In various cases previously such laws have been declared unconstitutional, but the majority of such regulating statutes have been declared constitutional.

PENNSYLVANIA. In consequence of the seriousness of unemployment in the winter of 1914-15 the Pennsylvania legislature requested the State Industrial Board to report on the subject of panics and industrial depressions. The report included a recommendation which was actively favored by Governor Brumbaugh that during periods of temporary industrial depression the State increase the employment of labor on public works. This recommendation was enacted into law, and an emergency fund for its application was created and placed in the custody of the Emergency Public Works Commission. The first appropriation was $50,000. The commission consists of the governor, auditor general, State treasurer, and commissioner of labor and industry.

THE AMERICAN ASSOCIATION OF PUBLIC EMPLOYMENT OFFICES held its fifth annual meeting at Milwaukee in September. The principal item of discussion was the report of a committee appointed in July, 1916, with the Commissioner of Labor, Royal Meeker, as chairman, to formulate plans for the standardization of the records and reports of the employment offices throughout the country. This committee held four sessions and collected data from numerous employment officials including representatives of twelve States and the Federal government. In consequence, great progress was made toward a uniform definition of terms to be used in employment records and toward uniform methods of handling renewals of applications, references to positions, placements, and the qualification of occupations and industries. The above committee at a meeting in Chicago in June passed a resolution recommending to Congress the establishment of a National Bureau of Employment Offices. In harmony with a request of the association the Bureau of Labor Statistics began publication of the proceedings of the annual meetings in Bulletin 220 which reported the 1916 session.

NATIONAL EXCHANGES. Favor for a system of national exchanges developed also in other quarters. It was pointed out that the terrible hardships of the winters of 1913-14 and 1914-15 had been too quickly forgotten; that the readjustment of industry at the cessation of the war should be forestalled in part by the development of a system of public employment exchanges covering the entire nation; and that the urgent desirability of utilizing every unit of available labor power within the country in order to secure the highest possible degree of military efficiency required the immediate establishment of such a system.

In consequence of such arguments a bill was introduced in Congress in December to create a Federal Employment Service. This provided for an extension and unification of all labor exchange activities of the government, including those of the post offices, and the establishment of a special bureau in the Department of Labor. The bill also provided that the Federal government would grant financial aid to any State or city equal to the amount spent by them in the maintenance of public employment agencies. It was argued that such a law would mobilize labor for the war, aid the reabsorption of returned soldiers after the war, and stabilize the labor markets of the future.

PORTLAND. An investigation by Mr. Glenn R. Johnson of 107 destitute unemployed men picked at random from the unemployed in Portland in 1914-15, as published in the *Journal of Delinquency*, showed that 18 per cent tested below 12 years in mental age, 26 per cent below 13 years, and 42 per cent below 14 years. The investigator believed that fully one-fifth of all were high-grade morons. This was somewhat greater than the percentage of feeble-minded among Portland prostitutes according to the estimates of the vice commission of that city. The number, however, was too small to warrant a broad generalization.

STATISTICS. The Bureau of Labor Statistics from reports covering a considerable number of establishments in all fundamental industries showed that there was a decrease in the number of workers employed in car building and repairing, cotton manufacturing, and silk, in June, 1917, as compared with June, 1916. All of these decreases, however, were small. The following industries reported increases in the number employed: iron and steel; automobiles; cotton finishing; hosiery and underwear; woolen; men's ready-made clothing; boots and shoes; cigar making; leather; and the paper industry.

CANADA. A petition supported by all the provincial governments, the Senate Labor Committee, the Federal Agricultural Committee, the Social Service Congress, the Imperial Munition Board, the heads of five universities, and numerous boards of trade, builders' exchanges, city councils, school boards, and other public and voluntary agencies in favor of a Dominion system of labor exchanges was placed before the governor-general in August. This petition was supported by recalling the hardships due to unemployment at the beginning of the war; by the recent report of the Ontario Commission on Unemployment showing the distress and demoralization due to unemployment; by the urgency of providing in advance some machinery for locating the more than 300,000 soldiers who would return to civil life at the end of the war; by the necessity of relocating at least 200,000 workers who would be dislocated by the cessation of war equipment industries; and by the desirability of more effective public aid in properly distributing the enlarged immigration expected after the war.

ENGLAND. According to *The Labour Gazette*, the percentage of unemployed among trade unions paying unemployed benefits averaged less than one-third of 1 per cent during the first seven months of 1917 as compared with an average of nearly 4 per cent for the 10 years, 1907-16. During August and September the percentage rose sharply, reaching 1.2 per cent at the first of October. The greatest amount of unemployment was in the cotton trade where it was 11.8 per cent among 80,000 employees. On the latter date the percentage of unemployed workers insured under the National Insurance Act of 1911 was 0.6 per cent, or only 13,700 among 2,292,000. Among the work people insured under the Munition Workers' Act of 1916 there were 0.89 per cent unemployed, or less than 12,000 among 1,340,000.

GERMANY. The German Department of Labor statistics reported less unemployment in August, 1917, than in August, 1916. In mining and smelting, metal trades, engineering trades, electrical and chemical trades there was even more strenuous industrial activity than in 1916, while in wood-working, textile and clothing trades, and building there was little change.

NORWAY. The Department of Labor Statistical Office reported the percentage of unemployment among trade unions aggregating 17,992 members was 0.9 on July 31; this compared with 0.4 for the same date in 1916. The largest percentage was among bricklayers and masons, and bakers in Christiania.

SWEDEN. The Department of Social Affairs reported the percentage of unemployed among Swedish trade unions with a total membership of 83,400 to be 6.1 on April 1 and 2.8 on June 1. For certain unions the percentage unemployed was as follows: stone workers, 14.6; bricklayers and masons, 33.4; painters, 30.2; tin plate workers, 11.5; general workers and factory operators, 11.6; and wood workers, 8.6.

ITALY. The Italian Department of Labor published in February details of new disbursements being made by the government as subsidies to various organizations providing unemployment benefits. Trade unions, benefit clubs, and coöperative societies giving unemployment benefits to their members are granted subsidies up to a total of $29,199. Labor exchanges were given grants not exceeding a total of $5840. Finally a sum of $97,330 was set aside as subsidies for Italians in enemy countries, with a contingent liability for repayment.

HOLLAND. In September, 1916, authority was given for the establishment of a government service for unemployment insurance and public employment offices in Holland. This was organized under the Ministry of Waterways and Forests. The plan contemplated the promotion of unemployment insurance by means of subsidies to unemployment funds and otherwise; the promotion of legislation regulating employment insurance; the subsidizing and organization of labor exchanges, their supervision, and coördination; and the promotion of legislation with reference to employment offices. After January 1, 1917, any approved unemployment funds will receive a subsidy equal in amount to the total contributions of its members, such subsidy to be paid one-half by the crown and one-half by the commune. Such subsidy is contingent in part upon the investment by societies of their unemployment fund in a manner prescribed by the new bureau; the supervision of funds is placed mainly in the hands of communal authority. Any commune may refuse to grant the prescribed subsidy in which case the state also withholds its proportion. A central employment bureau is created; the country is divided into thirty employment zones each with headquarters; all headquarters are connected with a central bureau which will publish a daily bulletin. The expenses of the central bureau may be borne by the state and those of the zone headquarters jointly by the state and communes.

UNIFLOW ENGINE. See AUTOMOBILES.

UNION COLLEGE. A non-sectarian institution for the education of men, located at Schenectady, N. Y. In the fall of 1917 there were 657 students and 46 members of the faculty. Volumes in the library numbered 50,000. Productive funds in 1917 amounted to $1,233,032 and the income to $67,231. The college was founded in 1795. President, Charles Alexander Richmond, LL.D.

UNITARIANS. The estimated number of communicants in this denomination in 1917 was over 71,200. There were 517 ministers and 490 churches in the United States and Canada. The American Unitarian Association, whose headquarters are in Boston, is the governing body of this denomination. This denomination is very active in the dissemination of literature, consisting of tracts, books, and periodicals. The association distributes about 400,000 tracts annually together with 45,000 copies of the monthly bulletin, *Word and Work*, 14,000 copies of the *Annual Report*, and 3000 copies of the *Unitarian Year Book*. The various departments of the association are: Finance, publication, publicity, foreign relations, comity and fellowship, religious education, church extension, social and public service, new Americans, ministerial aid, library, and church building loan fund. Unitarianism is also represented in the following countries: Africa, Australia, Great Britain and Ireland, New Zealand, Tasmania, Denmark, Norway, Sweden, Iceland, Japan, Palestine, India, Holland, Switzerland, Belgium, France, Bulgaria, Egypt, Germany, Italy, Jamaica, Russia, China, and Brazil. There are divinity schools at Cambridge, Mass., Meadville, Pa., and Berkeley, Cal. The periodicals are *The Christian Register; The Beacon; The Unitarian Advance; Unity; The Pacific Unitarian;* and *Unitarian Word and Work*. The president of the American Unitarian Association is Rev. Samuel A. Eliot, and the secretary, Rev. Louis C. Cornish.

UNITED BRETHREN IN CHRIST. This denomination, whose theology is practically the same as the Methodists, had its beginning in 1768, as a result of the evangelical work of Philip William Otterbein, a missionary to the German Reformed Church, who came to America in 1752. The church was not formally organized until 1800. In 1917 the 150th anniversary of its spiritual beginning was celebrated. The church is governed by a general conference, elected every four years, and composed of ministerial and lay delegates elected in equal proportion. On the first of January, 1917, there were 3630 churches; 1988 itinerant preachers, 440 local preachers; 348,585 members; 1844½ young people's societies, with a membership of 77,645; 746 junior and intermediate societies, with a membership of 28,321; 3522½ Sunday schools, with 43,483 teachers and officers and 454,275 scholars. The total church contributions for 1916 were $3,433,180. The value of the church houses in the same year was $13,206,561 and the value of the parsonages $2,307,904. There were 3364 church houses and 1167 parsonages. The denomination maintains educational institutions. The denominational organ is *The Watchword*, of which Rev. H. F. Shupe, Dayton, Ohio, is the editor.

UNITED KINGDOM. The United Kingdom of Great Britain and Ireland is treated in this book under the heading GREAT BRITAIN.

UNITED PRESBYTERIAN CHURCH OF NORTH AMERICA. The origin of this denomination dates from 1853, and was due to a union of associate and associate reformed churches. The *Presbyterian Handbook* for 1918 states that the total membership of this body in 1917 was 203,928 and the number of Sunday school scholars 193,199. The following figures are for 1916: 13 synods; 75 presbyteries; 1143 ministers; 1143 congregations; 1420 Sunday schools; and 1048 young people's societies with a membership of 36,514. Missions are maintained in India, Egypt, and the Sudan.

UNITED STATES. POPULATION. The estimated population of continental United States on July 1, 1917, was 103,635,306. The population on April 15, 1910, the year in which the last census was taken, was 91,972,206. The population of the several States and the territorial possessions will be found in the articles dealing with them.

AGRICULTURE. The general statistics for agriculture in 1917 in the United States and its dependencies will be found in the articles dealing with agriculture and agricultural production. In the section on agriculture in each of the State articles is given the acreage, production, and value in 1917. See also the articles on territorial possessions, the respective crops, AGRICULTURE, AGRICULTURAL LEGISLATION, and the UNITED STATES DEPARTMENT OF AGRICULTURE.

MANUFACTURES. The leading manufactures are dealt with in articles under their own titles, as cotton, rubber, silk, textiles, etc.

MINERAL PRODUCTION. The mineral production of the States is given in a paragraph in the State articles. See also the article MINERAL PRODUCTION. The following table gives the mineral products of the United States in 1915-16:

MINERAL PRODUCTS OF THE UNITED STATES IN 1915 AND 1916

Product	*1915*		*1916*	
	Quantity	*Value*	*Quantity*	*Value*
METALLIC				
Aluminum ....pounds	....	$16,280,000	....	$33,900,000
Antimonial lead....short tons (2,000 pounds)	23,224	3,665,736	24,038	4,463,582
Antimony ....short tons (2,000 pounds)	5,364	*a* 2,878,760	(*b*)	(*b*)
Bauxite ....long tons (2,240 pounds)	297,041	1,514,884	425,100	2,296,400
Cadmium ....pounds	91,415	108,448	135,212	205,433
Chromic iron ore....long tons	3,281	36,744	47,035	726,243
Copper, value at New York City....pounds	1,388,009,527	242,902,000	1,927,850,548	474,288,000
Ferroalloys ....long tons	388,644	17,450,385	589,738	50,281,692
Gold ....troy ounces	4,887,604	101,035,700	4,479,056	92,590,300
Iron:				
Ore ....long tons	55,493,100	*c* 101,288,984	77,870,553	*c* 181,902,277
Pig ....long tons	30,384,486	401,409,604	39,126,324	663,478,118
Lead (refined), value at N. Y. City...short tons	507,026	47,660,000	552,228	76,207,000
Manganese ore....long tons	8,708	108,049	26,997	627,417
Manganiferous ore ....long tons	196,640	822,216	548,808	2,005,491
Nickel, value at New York City.....short tons	822	538,222	918	671,192
Platinum and allied metals, value at New York City ....troy ounces	8,665	478,688	28,088	2,301,762
Quicksilver, value at San Francisco.... flasks (75 pounds net)	21,033	1,826,912	29,932	2,576,547
Silver ....troy ounces	74,961,075	37,397,300	74,414,802	48,953,000
Tin (metallic equivalent)....pounds	204,000	78,846	280,000	121,744
Titanium ore (rutile)....short tons	250	27,500	110	16,500
Tungsten ore (60 per cent concentrates)...... short tons	2,332	4,100,000	5,200	(*d*)
Uranium and vanadium minerals.....short tons	....	693,750	....	(*d*)
Zinc, sales value....short tons	458,135	113,617,000	563,451	151,005,000
Total value of metallic products..........	....	991,751,929	....	1,621,832,177

a Excluded from metallic totals, as the value of the antimony contained in antimonial lead is included in the antimonial lead value and the remainder under "Unspecified."

b Figures not yet available. Estimate of value included under "Unspecified."

c Not included in total value.

d Figures not yet available. Estimate of value included in metallic total.

Product		*1915*		*1916*	
NON-METALLIC		*Quantity*	*Value*	*Quantity*	*Value*
Arsenious oxide	short tons	5,498	$302,116	5,986	$555,186
Asbestos	short tons	1,731	76,952	1,479	448,214
Asphalt	short tons	740,254	5,242,078	786,811	7,102,132
Barytes (crude)	short tons	108,547	381,032	221,952	1,011,232
Borax (crude)	short tons	67,008	1,677,099	103,525	2,409,459
Bromine	pounds	855,857	856,307	688,260	922,225
Calcium chloride	short tons	20,535	130,830	26,062	216,729
Cement	barrels (380 pounds net)	87,685,222	75,155,102	95,394,433	104,689,090
Clay:					
Products		....	168,120,232	....	207,260,091
Raw	short tons	2,862,954	*a* 3,971,941	2,932,590	*a* 5,751,774
Coal:					
Bituminous	short tons	442,624,426	502,037,688	502,519,682	665,116,077
Pennsylvania anthracite	long tons	79,459,876	184,653,498	78,195,083	202,009,561
Coke	short tons	41,581,150	*a* 105,503,868	54,533,585	*a* 170,841,197
Diatomaceous (infusorial) earth and tripoli		....	167,474	....	241,558
Emery	short tons	3,063	31,131	15,282	123,901
Feldspar	short tons	105,118	489,223	132,681	702,278
Fluorspar	short tons	136,941	764,475	155,735	922,654
Fuller's earth	short tons	47,901	489,219	67,822	706,951
Garnet for abrasive purposes	short tons	4,301	139,584	6,171	208,850
Gems and precious stones		....	170,431	....	217,793
Graphite:					
Amorphous	short tons	1,181	12,358	2,622	20,723
Crystalline	pounds	7,074,370	417,273	10,931,989	914,748
Grindstones and pulpstones		....	648,479	....	766,140
Gypsum	short tons	2,447,611	6,596,893	2,757,730	7,959,032
Lime	short tons	3,622,810	14,424,036	4,083,803	18,618,816
Magnesite (crude)	short tons	30,499	274,491	154,974	1,393,693
Mica:					
Scrap	short tons	3,959	50,510	4,483	69,906
Sheet	pounds	558,821	378,259	865,868	524,485
Millstones		....	58,480	....	44,559
Mineral paints:					
Natural pigments	short tons	57,442	551,598	(*b*)	(*b*)
Zinc and lead pigments	short tons	141,383	14,962,461	135,606	23,515,803
Mineral waters	gallons sold	52,113,503	5,138,794	55,928,461	5,735,035
Natural gas		....	101,312,381	....	120,227,468
Natural-gas gasoline	gallons	65,364,665	5,150,823	103,492,689	14,331,148
Oilstones, etc.		....	115,175	....	154,578
Peat		....	288,537	....	309,104
Petroleum	barrels (42 gallons)	281,104,104	179,462,890	300,767,158	330,899,868
Phosphate rock	long tons	1,835,667	5,413,449	1,982,385	5,896,993
Potash (K$_2$O)	short tons	....	342,000	9,720	4,242,730
Pumice	short tons	27,708	63,185	33,320	82,263
Pyrite	long tons	394,124	1,674,933	423,556	1,965,702
Salt	short tons	5,352,409	11,747,686	6,362,906	13,645,947
Sand:					
Glass	short tons	1,884,044	1,606,640	2,018,317	1,957,797
Molding, building, etc., and gravel	short tons	74,719,259	21,514,977	87,073,415	27,852,198
Sand-lime brick		....	1,135,104	....	1,474,073
Silica (quartz)	short tons	112,575	273,558	88,514	242,786
Slate		....	4,958,915	....	5,338,837
Stone		....	74,595,352	....	79,041,699
Sulphur	long tons	(*c*)	(*c*)	(*c*)	(*c*)
Sulphuric acid (60° Baumé) from copper and zinc smelters	short tons	*d* 904,653	7,621,241	*d* 1,162,391	14,099,927
Talc and soapstone (exclusive of fibrous talc)	short tons	98,677	1,026,739	119,725	1,292,293
Talc, fibrous	short tons	88,214	864,843	93,236	961,510
Thorium minerals (monazite)	pounds	36,000	3,600	37,872	3,400
Total value of non-metallic products		....	1,398,565,121	....	1,878,507,232
Total value of metallic products		....	991,751,929	....	1,621,832,177
UNSPECIFIED *e*					
Metallic and non-metallic (estimate)		....	7,018,000	....	*e* 15,000,000
Grand total		....	2,397,335,050	....	3,515,339,409

a Not included in total value.

b Canvass discontinued. Value of iron ore sold for paint included under "Unspecified."

c Value included under "Unspecified."

d Includes 59,189 tons in 1915 and 92,802 tons in 1916 of stronger acid, reported as oleum, etc., not converted to 60° Baumé.

e Includes in 1916 antimony other than content of antimonial lead, bismuth, cadmium sulphide, diatomaceous earth for special uses, iron ore sold for paint, lithium minerals, lithographic stone, magnesium, marls, molybdenum, pebbles for grinding, selenium, silica sand and sandstone (finely ground), strontium, sulphur, and an estimate of the value of miscellaneous mineral products not collected annually by the Survey.

EDUCATION. For information relating to educational matters, see the articles on EDUCATION IN THE UNITED STATES, and UNIVERSITIES AND COLLEGES. In most of the State articles will be found short summaries of educational statistics and other matters.

RELIGION. For information relating to the various denominations, see the articles on these denominations.

FOREIGN COMMERCE. The event of transcending importance to the foreign trade of the United States during the fiscal year 1917 was its entrance into the war. From the beginning of the war to the time of the entrance of this government into it, the business of American manufacturers and importers was to sell munitions and supplies to the belligerents, to make the most of new opportunities in the markets of non-belligerents, and to take the necessary steps in preparation for trade after the war.

Upon our entrance into the war, however, the situation changed. Trading with the Allies assumed a new and greater significance—it became primarily a means of winning the war, rather than of winning profits. The attitude of the United States toward the market in non-belligerent countries also, as a matter of course, met with a distinct change. It was now necessary to carry on trade with them with a careful and patriotic difference to the successful prosecution of the war.

The fiscal year 1917 was the greatest year in foreign trade. The total of our transactions with foreign countries was unprecedented in the history of the United States or any other country. Merchandise, exported and imported, was valued at $8,953,000,000, a notable gain even when compared with the $6,531,000,000 of the previous year. It more than doubled the highest figure ever recorded in normal times. The chief gain was in exports, which were valued at $6,293,806,090, as against $4,333,482,885 in 1916. Before the war the monthly exports averaged about $200,000,000; in 1915 the average was about $230,000,000; in 1916, it had risen to $361,000,000; and in 1917 the average monthly value of exports was $524,000,000. The greatest month in the history of American export trade was January, 1917, when the sales abroad amounted to $613,000,000.

The imports also increased in a notable manner in 1917, for the total value of foreign merchandise brought into the country was about $2,660,000,000, an increase of more than $460,000,000 over 1916, the former record year. With the exception of England, no country has ever imported merchandise at this rate. In normal times, the imports had averaged about $150,000,000 a month, but in 1917 the average was raised to $221,000,000. In June, the closing month of the fiscal year, a total of $306,000,000 worth of foreign products were brought into the country. The exports exceeded the imports by $3,634,000,000. This increase in excess of exports amounted to 70 per cent as compared with 1916, and 232 per cent as compared with 1915. The significance of these figures will be better realized if it be borne in mind that the balance of trade in our favor in the twenty years before the war amounted to something less than $450,000,000 a year.

The most interesting feature of the export trade for 1917 is the great gain in the sales of completed manufactures; $2,944,000,000 worth of such products were shipped in 1917, as compared with approximately $2,000,000,000 in 1916 and $725,000,000 worth in 1915.

By far the largest part of our export trade was with Europe. In 1914, nearly 63 per cent of the exports were sent to that continent, and this increased to over 60 per cent in 1917. Most of our exports, during the last two or three years to Europe have been army supplies and foodstuffs, and it is to be expected that when peace is made, there will be a falling off in the sale of such lines. On the other hand, it is probable that the demand by European countries, especially Belgium, France, and Russia, for building materials, machinery, railroad equipment, and other construction and reconstruction materials, will be larger than it has been during the war.

The total exports to Europe in 1917 amounted to $1,325,000,000, as compared with $1,486,000,000 in 1914. Exports to South and Central America, Australia, and the Far East, as well as Africa, show a general increase. The following table shows the total values of exports of merchandise, by principal countries and grand divisions, during the fiscal years ended June 30, 1916 and 1917.

VALUES OF EXPORTS, 1916 AND 1917

Countries	*1916*	*1917*
EUROPE		
Austria-Hungary	$146,302	....
Belgium	21,848,114	$37,348,319
Denmark	55,872,312	56,728,524
France	628,851,988	1,011,529,095
Germany	288,899	2,199,449
Italy	269,246,105	360,529,625
Netherlands	97,476,328	109,504,109
Norway	58,645,295	82,017,054
Russia in Europe	178,694,800	428,284,663
Spain	52,836,721	76,992,669
Sweden	51,979,745	45,116,443
Switzerland	8,082,516	22,325,779
United Kingdom	1,526,685,102	2,047,545,843
Other Europe	53,650,870	45,322,163
NORTH AMERICA		
Canada	468,784,793	787,529,729
Central America	41,703,906	52,728,324
Mexico	47,945,519	78,659,893
British West Indies	16,230,039	21,844,201
Cuba	127,198,578	178,883,248
Other North America	31,161,839	44,805,789
SOUTH AMERICA		
Argentina	66,378,866	82,382,884
Brazil	40,572,197	56,761,252
Chile	24,239,826	44,578,185
Colombia	11,666,932	14,906,786
Peru	9,526,230	18,885,174
Uruguay	10,287,384	14,292,135
Venezuela	9,088,998	12,885,222
Other South America	8,415,441	14,872,820
ASIA		
China	25,131,459	37,306,388
East Indies (British)	24,696,872	37,090,430
Japan	74,470,981	130,472,189
Russia in Asia	131,111,792	130,300,542
Other Asia	28,199,827	45,151,169
OCEANIA		
Australia & N. Zealand	74,002,526	82,043,469
Philippine Islands	23,421,172	27,545,476
Other Oceania	1,352,130	1,695,183
AFRICA		
British Africa	28,399,377	32,695,101
Other Africa	15,191,654	20,051,768
Total	$4,333,482,885	$6,293,806,090
RECAPITULATION		
Europe	$2,999,305,097	$1,325,443,735
North America	788,024,074	1,164,451,184
South America	180,175,374	259,559,458
Asia	278,610,881	380,320,718
Oceania	98,775,828	111,284,128
Africa	43,591,031	52,746,867

The imports showed important changes in 1917, compared with former years. For the first time in the history of the country, Europe, which had held first place in selling goods to the United States, declined to second place, while North America took first place. In 1914 the imports from Europe were valued at $896,000,000, or 47¼ per cent of the total, while imports from North America were valued at $477,000,000, or 22½ per cent of the total. In 1917 the imports from Europe showed a decrease of $285,000,000 from the figures of 1914, and the imports from North America showed an increase of $339,000,000, a gain of 80 per cent for North America, against a loss of 32 per cent for Europe. The imports of German goods decreased $188,000,000 in 1917 against 1914, amounting to $190,000,000 in 1914 and $2,000,000 in 1917. Other decreases shown in the import trade are: Austria-Hungary went from $20,000,000 to less than $250,000 in 1917; Belgium from $41,000,000 in 1914 to $1,000,000 in 1917;

France from $141,000,000 in 1914 to $108,000,000 in 1917; Italy from $56,000,000 in 1914 to $46,000,000 in 1917; and Russia from $21,000,000 in 1914 to $5,000,000 in 1917.

The following table shows the total values of imports of merchandise into the United States by principal countries and grand divisions during the fiscal years ended June 30, 1916 and 1917:

VALUES OF IMPORTS, 1916-1917

Countries	*1916*	*1917*
EUROPE		
Austria-Hungary	$1,430,935	$225,452
Belgium	1,478,579	1,029,261
France	102,077,620	108,069,706
Germany	13,945,743	1,524,693
Italy	57,432,436	46,374,368
Netherlands	38,534,509	31,842,144
Norway	6,851,714	7,108,311
Russia in Europe	3,613,986	5,446,095
Spain	27,864,130	36,862,571
Sweden	11,846,881	23,642,433
Switzerland	21,775,413	20,252,954
United Kingdom	308,443,223	307,674,853
Other Europe	20,957,580	20,417,829
NORTH AMERICA		
Canada	204,018,227	320,949,492
Central America	25,899,607	35,986,874
Mexico	97,676,544	112,138,677
British West Indies	14,404,754	16,759,466
Cuba	228,977,567	253,395,410
Other North America	20,918,844	26,882,618
SOUTH AMERICA		
Argentina	112,512,420	152,612,411
Brazil	132,663,984	151,638,245
Chile	64,154,859	113,789,130
Colombia	21,458,029	28,965,920
Peru	24,326,689	36,379,016
Uruguay	14,475,478	30,406,532
Venezuela	14,942,448	15,018,567
Other South America	7,028,111	13,402,999
ASIA		
China	71,655,045	105,905,531
East Indies (British)	177,423,346	217,610,056
Japan	147,644,228	208,127,478
Other Asia	40,458,845	83,574,398
OCEANIA		
Australia & N. Zealand	64,553,441	18,874,571
Philippine Islands	28,232,249	42,436,247
Other Oceania	3,440,301	4,017,561
AFRICA		
British Africa	26,759,970	25,298,667
Egypt	33,254,943	29,728,445
Other Africa	4,750,832	4,991,204
Total	$2,197,883,510	$2,659,355,185
RECAPITULATION		
Europe	616,252,749	610,470,670
North America	591,895,543	766,112,537
South America	391,562,018	542,212,820
Asia	437,181,464	615,217,463
Oceania	96,225,991	65,328,379
Africa	64,765,745	60,018,316

For the calendar year, the foreign trade of the country amounted to over $9,000,000,000; exports reaching a total of $6,226,000,000, while the imports amounted to $2,925,000,000. This is a gain of nearly $1,300,000,000 over 1916, when the total trade amounted to $7,874,000,000. The tables following show the chief articles of imports and exports in the fiscal years 1916-17:

CHIEF ARTICLES OF IMPORT, 1916-1917

Articles	*1916*	*1917*
Art work	$20,831,531	$23,899,966
Chemicals, drugs, and dyes	109,106,634	124,770,575
Coffee	115,485,970	133,184,000
Copper, and manufactures of	52,881,055	93,703,230
Cotton, and manufactures of	47,511,870	56,181,684
Earthen, stone, and chinaware	5,837,206	5,989,964
Fibres:		
Manufactures of	68,444,735	78,955,185
Unmanufactured	59,460,062	67,709,758
Fruits, including nuts	44,446,307	58,180,957
Furs, and manufactures of	16,891,699	4,655,812
Hides and skins and other than fur skins	158,861,376	216,363,609
India rubber and gutta percha and crude	155,044,790	189,328,674
Iron and steel, and manufactures of	23,393,250	27,899,829
Leather, and manufactures of	19,019,526	27,393,513
Oils	48,091,993	67,677,316
Precious stones	45,101,936	47,270,689
Silk:		
Manufactures of	31,911,856	40,322,840
Unmanufactured	124,333,655	160,571,808
Spirits, wines, and malt liquors	16,685,356	17,679,132
Sugar	208,769,399	230,574,221
Tea	20,599,857	19,265,264
Tin, in bars, blocks, or pigs	50,876,901	54,996,098
Tobacco, and manufactures of	17,872,126	20,182,984
Wood, and manufactures of	64,559,815	93,295,052
Wool:		
Manufactures of	15,657,537	18,862,463
Unmanufactured	142,420,734	131,137,170

CHIEF ARTICLES OF EXPORT, 1916-1917

Articles	*1916*	*1917*
Agricultural implements	$17,611,297	$26,552,826
Animals	99,662,813	89,382,954
Automobiles	120,000,866	90,958,248
Breadstuffs	435,696,629	589,234,737
Chemicals, drugs, dyes, and medicines	124,362,167	187,846,351
Coal	65,958,275	83,119,288
Copper, and manufactures of	173,946,226	320,284,174
Cotton:		
Manufactures of	112,053,127	136,253,858
Unmanufactured	374,186,247	543,100,542
Fertilizers	5,343,497	6,971,011
Fish	19,983,545	19,875,614
Fruits, including nuts	36,965,328	39,394,197
Iron and steel, and manufactures of, not including ore	621,209,453	1,129,341,616
Leather, and manufactures of	146,613,815	153,711,912
Meat and dairy products	291,057,602	404,143,791
Mineral oils	166,423,230	223,790,599
Naval stores	13,503,607	15,607,311
Oil cake and oil cake meal	28,541,304	31,286,840
Paraffin and paraffin wax	12,873,250	16,021,811
Paper, and manufactures of	29,111,004	43,161,701
Tobacco:		
Manufactures of	6,944,147	15,552,544
Unmanufactured	53,163,595	59,954,239
Vegetable oils	27,167,220	26,280,019
Wood, and manufactures of	60,707,229	62,817,451

CONDITION OF THE TREASURY. The following table shows the financial condition of the United States treasury on December 31, 1917:

GENERAL FUND

Assets	
Available gold (see below)	$59,251,972.12
Available silver dollars (see below)	16,300,521.00
United States notes	8,781,228.00
Federal reserve notes	23,577,065.00
Federal reserve bank notes	69,240.00
National-bank notes	14,292,455.58
Certified checks on banks	25,151.66
Subsidiary silver coin	1,791,849.58
Minor coin	625,037.04
Silver bullion (available for subsidiary coinage)	7,174,476.60
Unclassified (unsorted currency, etc.)	1,202,999.25
Deposits in Federal land banks	2,180,000.00
Deposits in Federal Reserve Banks	108,467,679.90

Assets

Deposits in Special Depositaries:	
Account of sales of certificates of indebtedness	251,091,014.99
Liberty Loan deposits	438,420,909.59
Deposits in National Banks:	
To credit of Treasurer, United States	37,745,705.70
To credit of other government officers	8,268,831.82
Deposits in Philippine treasury:	
To credit of Treasurer, United States	1,496,630.92
To credit of other government officers	2,223,544.71
Total	$982,986,313.46

Liabilities

Treasurer's checks outstanding	$7,090,895.90
Deposits of government officers:	
Post Office Department	17,410,354.46
Board of trustees, Postal Savings System (5 per cent reserve)	5,716,950.44
Comptroller of the Currency, agent for creditors of insolvent banks	982,892.81
Postmasters, clerks of courts, etc.	26,169,884.02
Deposits for:	
Redemption of Federal reserve notes (5 per cent fund)	61,063,622.44
Redemption of Federal reserve bank notes (5 per cent fund)	536,700.00
Redemption of national-bank notes (5 per cent fund)	28,094,683.67
Retirement of additional circulating notes, act May 30, 1908	1,566,395.00
Exchanges of currency, coin, etc.	11,291,965.38
	$159,924,344.12
Net balance	823,061,969.34
Total	$982,986,313.46

Public Debt. The total interest bearing debt on December 31, 1917, amounted to $7,116,032,330; the debt bearing no interest amounted to $238,503,780, and the debt on which interest has ceased amounted to $2,841,240, making a total gross debt of $357,377,351. The balance available at the end of the year to pay maturity obligations amounted to $1,693,018,254, leaving a total net debt of $6,664,359,097.

Circulation Statement. The following table shows the money in circulation in the United States on December 31, 1917:

CIRCULATION STATEMENT

Circulating medium	*Jan. 1, 1918*	*Jan. 1, 1917*	*Dec. 1, 1917*	*Jan. 1, 1879*
Gold coin (including bullion in Treasury)	$972,561,266 *a*	$679,702,890	$1,065,170,819	$96,262,850
Gold Certificates	1,096,860,844	1,660,030,029	1,154,911,989	21,189,280
Standard Silver Dollars	77,869,353	72,330,864	76,815,307	5,790,721
Silver Certificates	472,191,576	476,795,618	474,467,405	413,360
Subsidiary Silver	216,434,729	190,171,320	212,502,353	67,982,601
Treasury Notes of 1890	1,908,063	2,035,188	1,912,059	....
United States Notes	337,899,788	341,271,554	339,852,125	310,288,511
Federal Reserve Notes	1,227,243,190	298,013,285	1,044,804,181	....
Federal Reserve Bank Notes	12,535,925	11,764,495	12,756,885	....
National Bank Notes	704,920,174	708,817,446	702,677,229	314,339,398
Total	$5,120,424,908	$4,440,932,634	$5,085,870,352	816,266,721
Population of continental United States estimated at	105,006,000	103,287,000	104,863,000	48,231,000
Circulation per capita	$48.76	$43,00	$48.50	$16.92

a Includes $299,843,787.50 credited to Federal Reserve Banks in the Gold Settlement fund deposited with Treasurer U. S.

Army and Navy. Matters affecting the army and navy during the year are sufficiently covered in the articles, Military Progress and Naval Progress, Shipping, and the United States and the War.

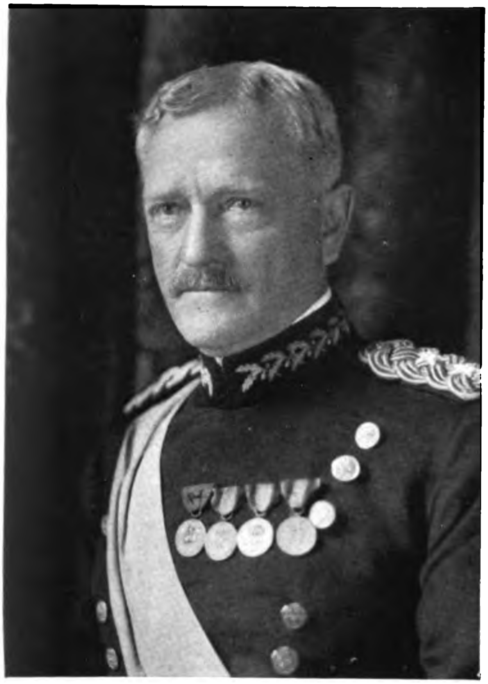
Post Office. The total revenue of the postal service for the fiscal year ending June 30, 1917, amounted to $329,726,116, an increase over 1916 of $17,668,427. The expenditures amounted to $319,838,718, an increase over the previous year of $13,134,685.

The needs of the military establishment have necessitated special provision by the Postal Department for the handling of mail for the American forces at home and abroad. This was brought about speedily and satisfactorily, although it included a specially organized service for camps and cantonments at home, and a new postal service adapted to the needs of the expeditionary forces and for the navy abroad. Upon the declaration of war with Germany, the department took immediate steps to provide for such service. A commission of postal experts studied the extensive British and French army postal service in London and Paris and at the front. The first United States army post office in France was opened shortly after the arrival of the first contingent of troops on the continent. The mail is distributed to companies and other units and delivered daily by railroads and army trucks to the various camps, where it is turned over to the authorized representatives of the army for proper delivery. In the United States it was necessary to provide adequate mail facilities to serve more than 1,000,000 men mobilized at the various cantonments and aviation fields. Such branch offices have been established at military camps in twenty-nine States, and the average volume and importance of business was equal to that of offices in the cities having a population of 200,000.

The parcel post continued to develop throughout the year, and the number of parcels handled increased more than 25,000,000, or 14 per cent over 1916, and the total weight handled exceeded 2,000,000,000 pounds.

The postal savings system showed a remarkable growth during the year, and on June 30, 1917, there were 674,728 depositors in the books of the system with $131,954,696 to their credit.

The war revenue measure which became a law on October 3, 1917, provided for an increase in the rates of postage on first-class mail and a gradual increase in the rates of second-class matter and established zone rates on that devoted to advertisements. The maximum rate on advertisements will not be reached until July 1, 1921. A tax was also imposed on parcel post when the postage amounts to twenty-five cents or over. The increase in second-rate postage aroused great opposition among the publishers of magazines and newspapers, and efforts were at once begun to bring about a repeal of that portion of the law in the Sixty-Fifth Congress.



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GENERAL JOHN J. PERSHING
Commander of the American Expeditionary Forces

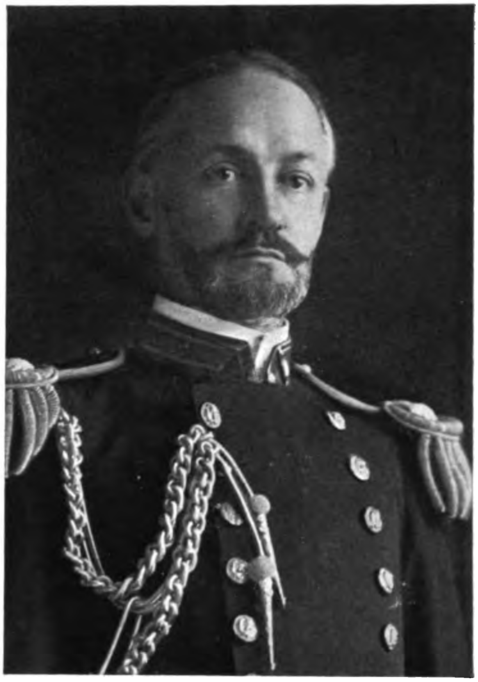

Photo by Harris & Ewing

VICE ADMIRAL W. S. SIMS
In Command of the American Patrol Fleet

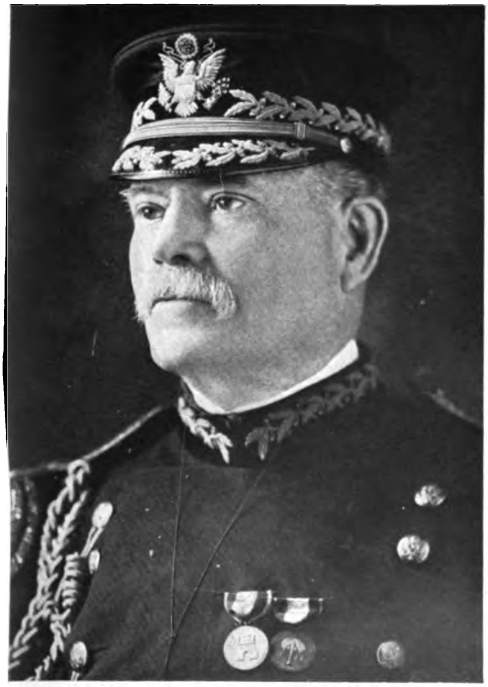

Photo by Harris & Ewing

GENERAL TASKER H. BLISS
Chief of Staff, U. S. A.
(Appointed, September 21, 1917)

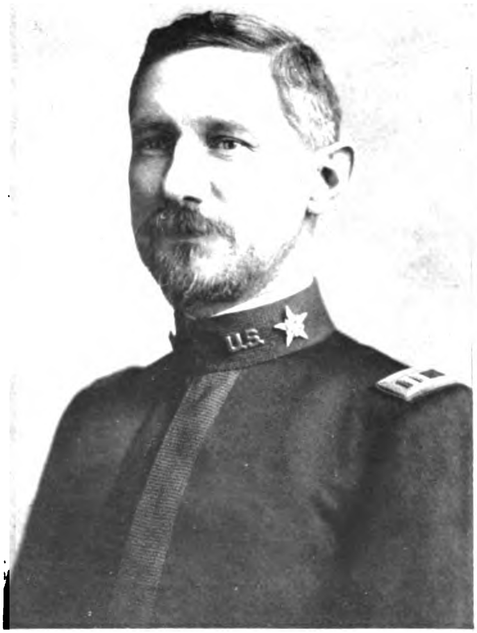

Photo by Harris & Ewing

MAJOR GENERAL PEYTON C. MARCH

FOUR PROMINENT OFFICERS OF THE UNITED STATES FORCES

Pensions. The amount paid for pensions for the fiscal year 1917 was $160,895,054. By an act of April 27, 1917, provision was made for a special pension of $10 per month for life, payable quarter yearly, in addition to any other pension under any existing or subsequent law, to every person over sixty-five years of age, who was placed on the army and navy medal of honor roll. Under this law were entered on the roll 351 names. The amount of payments in 1917 on account of this act was $41,582.

In the first section of the act of September 8, 1916, the pensions of 157,248 widows were increased from $12 to $20 per month. Under the act of March 4, 1917, the Indian War Survivors' Act, 6517 claims had been filed up to June 30, 1917. Up to that date only 11 claims had been filed for service in the war of 1917, but these had been materially increased at the end of the year.

Patents. The total number of applications for patents in 1917 was 701,620, an increase of 1317 over 1916. The total number of applications awaiting action on June 30, 1917, was 16,058, a decrease of 50. The total number of patents granted in 1917 was 44,179, a decrease of 1954. The total receipts of the office amounted to $2,317,519, and the total expenditures $2,095,138.

Bureau of Mines. The bureau in 1917 coöperated with the Council of National Defense and other national bureaus in work necessary for the successful conduct of the war. It carried on investigations into the fixation of atmospheric nitrogen and oxidation of ammonia to nitric acid, for the purpose of aiding the government to obtain the supply of nitrates for use in agriculture or in the manufacture of explosives. It also investigated noxious gases used in warfare, and developed masks to protect men from such gases. It carried on an investigation in the use of smoke screens in warfare, and the methods best suited to produce such screens. In addition to its work along these lines, the bureau trained 4800 men in mine rescue and first aid methods. On June 30, 1917, the total number of men trained in the organization was 46,873. As a result of the investigation of the bureau into radium, in coöperation with the National Radium Institution, there was acquired $200,000 worth of radium, which has been used for scientific and medical research.

Diplomatic Service. The most important changes in the personnel of the diplomatic service in 1917 resulted from a declaration of war with Germany. As is related in the article, **United States and the War** (q. v.), Ambassador Gerard left Berlin, after some delay, and arrived safely home. Ambassador Bernstorff also was given safe conduct and reached Germany without incident.

The revolution in Russia resulted in the resignation of the Russian Ambassador, George Bakhméteff, who was out of sympathy with the revolutionists and declined to serve as their representative. He was succeeded by Mr. Boris A. Bakhmetieff as Ambassador representing the revolutionists.

Following the declaration of war with Austria-Hungary, Ambassador Penfield at once returned to the United States. These were the chief changes in the diplomatic personnel during the year. A list of the representatives of the United States to foreign countries and of foreign countries to the United States is given below:

AMBASSADORS

Country	*Accredited by United States*		*Accredited to United States*	
Argentina	F. J. Stimson, Mass.	1914	Rómulo S. Náon	1911
Brazil	Edwin V. Morgan, N. Y.	1913	Domicio da Gama	1911
Chile	Joseph H. Shea, Ind.	1916	Don Santiago Aldunate	1917
France	W. G. Sharp, Ill.	1912	J. J. Jusserand	1903
Great Britain	Walter Hines Page, N. Y.	1913	Sir Cecil Arthur Spring-Rice	1913
Italy	Thomas Nelson Page, Va.	1913	Count Vincenzo Macchi di Cellere	1914
Japan	Roland S. Morris	1917	Aimaro Sato	1916
Mexico	Henry P. Fletcher, Pa.	1916	Ygnacio Bonillas	1917
Russia	David R. Francis, Mo.	1916	Boris Bakhmetieff	1917
Spain	Joseph E. Willard, Va.	1913	Don Juan Riaño y Gayangos	1913

MINISTERS PLENIPOTENTIARY

Country	*Accredited by United States*		*Accredited to United States*	
Belgium	Brand Whitlock, O.	1913	E. de Cartier de Marchienne	1917
Bolivia	John D. O'Rear, Mo.	1913	Ignacio Calderón	1904
China	Paul S. Reinsch, Wis.	1913	V. K. Wellington Koo	1915
Colombia	Hoffman Philip	1917	Dr. Carlos Adolfo Urueta	1917
Costa Rica	Edward J. Hale, N. C.	1913	Manual Castro Quesada	1915
Cuba	William E. Gonzales, S. C.	1913	Carlos M. de Céspedes	1914
Denmark	Maurice F. Egan, D. C.	1907	Constantin Brun	1913
Dominican Republic	W. W. Russell	1915	Dr. Luis Galván	1917
Ecuador	Charles S. Hartman, Mont.	1913	Dr. Don Rafael H. Elizalde	1917
Greece *	Garrett Droppers	1914	Mr. Georges Roussos	1917
Guatemala	William H. Leavell, Miss.	1913	Joaquin Antonio Mendez	1912
Haiti	Arthur Bailly-Blanchard, Wis.	1914	Solon Ménos	1914
Honduras	John Ewing, La.	1913	Dr. Alberto Membreno	1912
Netherlands †	John W. Garrett, Md.	1916	W. L. F. C. Van Rappard	1913
Nicaragua	Benjamin L. Jefferson, Colo.	1913		
Norway	Albert G. Schmedemann, Wis.	1913	H. H. Bryn	1910
Panama	William J. Price, Ky.	1913	Dr. Don Belisario Porras	1917
Paraguay	Daniel F. Mooney, N. Y.	1909	Hector Velazquez	1913
Persia	John L. Caldwell	1914	Mehdi Khan	1914
Peru	Benton McMillin, Tenn.	1913	Manuel de Freyre Y. Santander	1917
Portugal	Thomas H. Birch, N. J.	1913	Viscount de Alte	1902
Rumania ‡	Charles J. Vopicka, Ill.	1913		
Salvador	Boaz W. Long, N. Mex.	1914	Dr. Rafael Zaldivar	1915
Siam	George P. Ingersoll	1917	Phya Prabha Karavongse	1913
Sweden	Ira N. Morris, Ill.	1914	W. A. F. Ekengren	1912
Switzerland	Pleasant A. Stovall, Ga.	1913	Mr. Hans Sulzer	1917
Uruguay	Robert E. Jeffrey	1916	Carlos María de Pena	1911
Venezuela	Preston McGoodwin, Okla.	1913	Santos A. Dominici	1914

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* Accredited also to Montenegro. † Accredited also to Luxemburg. ‡ Accredited also to Serbia and Bulgaria.

Cabinet. There were no changes in the Cabinet during the year. The activities of its members will be found treated in the various articles throughout the Year Book.

The Sixty-Fourth Congress, Second Session. Congress reassembled after the holiday session on January 2. On the day following, debate in the Senate began on a resolution introduced by Senator Hitchcock of Nebraska, endorsing the action of the president in asking the nations at war to state the terms on which they would discuss peace. Two days later the resolution, amended so as to endorse the president's "request" but not his "action," was passed by a vote of 48 to 17.

The Senate, on January 9, by a vote of 55 to 32, passed the Sheppard Bill prohibiting the manufacture or importation or sale of liquor in the District of Columbia.

The Rules Committee of the House, on January 5, engaged Sherman L. Whipple of Boston to act as counsel in the investigation of the alleged "leak" by which confidential information was said to have reached Wall Street, and influenced the price of stocks. It was charged that advanced information was given in relation to the president's intention to issue a note to the belligerent nations suggesting preliminary steps toward the conclusion of peace. The counsel questioned Thomas W. Lawson, of Boston, who had brought the charges, and several prominent financiers of New York City. It might be stated that the investigation, which was prolonged over several weeks, had no final results.

The Senate, on January 8, adopted the conference report of the Immigration Bill by a vote of 56 to 10. The House, on the following day, passed the Hughes-Smith Vocational Education Bill providing funds for coöperation with the States in the training and paying of teachers and directors of agricultural, commercial, industrial, and domestic science subjects.

On January 10, after a long controversy, the Senate confirmed the reappointment of Winthrop M. Daniels as member of the Interstate Commerce Commission. The appointment was opposed by Senator Cummins of Iowa, who charged Mr. Daniels with having capitalistic sympathies.

On January 2, President Wilson appeared before the Senate and delivered an address on the foreign relations of the United States (see United States and the War). Opposition to the president's suggestions at once appeared. Senator Borah introduced a resolution calling upon the Senate to reaffirm the policies "announced by Washington, Jefferson, and Monroe, and ever since adhered to by this country." Senator Cummins of Iowa introduced another resolution calling for the full debate on the president's speech.

On January 31, the note of Germany in relation to the submarine warfare was delivered to the State Department, and on February 3, President Wilson addressed the joint session of the two Houses of Congress. For the full text of this address see the article on United States and the War. The president's action in breaking off diplomatic relations with Germany received the support of practically every member of Congress.

On January 29, the president vetoed, for the second time, the Immigration Bill, which was promptly passed over his veto by the House by a vote of 285 to 106. It was later repassed by the Senate. See Immigration and Emigration.

The Senate on February 7 passed a resolution by a vote of 78 to 5 approving "the action taken by the president as set forth in his address delivered before the joint session of Congress." The senators voting in the negative were Senator Kirby of Arkansas; Senator Vardaman of Mississippi; Senator Gronna of North Dakota; Senator Works of California; Senator La Follette of Wisconsin. The first two are Democrats and the others Republicans. Party lines were ignored during the debate on the resolution. Senator Lodge of Massachusetts warmly endorsed the action of the president.

Senator La Follette, the leader of the pacifist element in the Senate, introduced a resolution prohibiting the armament of American merchant vessels. The Senate considered the so-called Neutral Laws introduced at the request of the administration. Senator Cummins of Iowa opposed the measure on the ground that the prohibition against the revelation of military secrets, as provided for in the bills, would prevent any public discussion of national unpreparedness. Other Senators criticized the provisions against espionage on the ground that they would endanger the liberty of innocent people who might unwittingly enter a prohibited area.

On February 13, a Naval Appropriation Bill authorizing the expenditure of $368,000,000, passed the House by a vote of 354 to 22. The chief opponents of the bill were Democrats. The sub-committee of the Senate Naval Affairs Committee agreed to add to the House bill many appropriations, including a lump sum of $150,000,000 to expedite construction and to meet any emergency which might arise before Congress would again meet to vote the necessary funds.

The Senate, on February 6, passed the Post Office Appropriation Bill carrying over $330,000,000. The bill contains a provision barring from the mails all letters, postal cards, circulars, newspapers, and publications of every kind, advertising intoxicating drinks, if sent to any address within a State or Territory in which the sale of liquor is prohibited.

In the first week in March, Congress received for consideration the bill for universal military training and service prepared by the general staff of the army. It was sent to Congress without the specific endorsement of the president or the secretary of war. During the last week of the session the progress of the business of Congress was prevented by the action of Republican senators, who wished for an immediate session of the new Congress following the adjournment of the old. The Emergency Revenue Bill was at the time under discussion, and the filibuster began with a debate over the new taxes on excess profits provided for in the bill. After an appeal from the Democratic leaders, the Republican senators finally agreed to permit a vote on the revenue bill. During the filibuster there were many speeches delivered in relation to the war situation. The president was strongly defended by Senator Williams of Mississippi and was criticized by Senator Lodge of Massachusetts.

On February 22, the House approved a measure already passed in the Senate prohibiting the importation of liquor into any State which prohibited the manufacture and sale of intoxicants.

On February 20 the Senate passed, by a vote of 60 to 10, the Omnibus Bill directed against espionage. Of the 10 senators against the bill, 7 were Republicans and 3 Democrats.

On February 26 President Wilson appeared before the joint session and requested authority to supply merchant ships with defensive arms and "to employ any other instrumentalities or methods that may be necessary and adequate to protect our ships and our people." The full text of this measure will be found in the article UNITED STATES AND THE WAR.

Following the action of the president, there was at once introduced into the House a bill covering the power requested by the president, and appropriating one hundred million dollars to be raised by bond issue for arming, insuring, and protecting such ships. A similar bill was introduced into the Senate. The measures were opposed in both Houses, but were passed by the House on March 1 by a vote of 403 to 13. In the Senate the opposition was much more serious. Senator Stone of Missouri, chairman of the Foreign Affairs Committee, and theoretically the spokesman of the president on international affairs, refused to support the bill, and led the fight against it. He was supported in his attitude by a group of Republican senators under the leadership of Senator La Follette of Wisconsin. Although they were unable to defeat the bill, it was within their power to prevent it from coming to a vote by consuming the few remaining hours of the session with speeches. The majority of the senators who favored the bill, finding it impossible to bring it to a vote, signed the following resolution:

"The undersigned United States senators favor the passage of Senate Bill 8322, to authorize the president of the United States to arm American merchant vessels. A similar bill already has passed the House of Representatives by a vote of 403 to 13. Under the rules of the Senate allowing unlimited debate it now appears to be impossible to obtain a vote prior to noon, March 4, 1917, when the session of Congress expires. We desire the statement entered in the record to establish the fact that the Senate favors the legislation and would pass it if a vote could be obtained."

Among the senators who did not sign the resolution were Penrose, La Follette, Norris, Works, Clapp, Gronna, Cummins, Republicans, and Stone, O'Gorman, Kirby, and Vardaman, Democrats. Owing to the fact that the business of Congress was held up by the Republican and pacifist filibuster, many of the tasks undertaken in the session remained unaccomplished. Among these were nearly two thousand confirmations of nominations, the Railroad Labor Bill, and a bill relating to the high cost of foodstuffs. Several important measures, however, were passed in the last week of the session. One of these was the Revenue Bill, which provided for the raising of $350,000,000 by special taxation and bond issues. Other measures passed were several of the regulation appropriation bills, the measure establishing a form of government for the Danish West Indies, a Flood Control Bill, and a bill granting American citizenship to the natives of Porto Rico. The Naval Appropriation Bill carrying $550,000,000 also passed both Houses. The Army Bill, however, remained in the Senate, as it did not reach a vote. On March 4 the president issued a statement on the failure of the Armed Ship Bill, in which he reviewed the situation and declared that "A little group of willful men, representing no opinion but their own, have rendered the great government of the United States helpless and contemptible." The group, according to the press, comprised the following twelve Senators: La Follette, of Wisconsin; Clapp, of Minnesota; Cummins, of Iowa; Gronna, of North Dakota; Kenyon, of Iowa; Norris, of Nebraska; Works, of California; Kirby, of Arkansas; Lane, of Oregon; O'Gorman, of New York; Stone, of Missouri; Vardaman, of Mississippi.

THE SIXTY-FIFTH CONGRESS, SPECIAL SESSION. Shortly after the expiration of the Sixty-Fourth Congress, President Wilson issued a call for a special session of the Sixty-Fifth Congress to convene on April 16. In the meantime the Senate continued in special executive session and on March 5 the senators who were elected in November, 1916, took the oath of office. There were 16 new senators and 12 others who had been reëlected. The Senate addressed itself to a revision of its rules which would make impossible such a situation as had been created during the last days of the previous session. A committee of six Democrats and five Republicans was appointed to consider the changes to be made. Caucuses of both parties approved a bill providing that at any time sixteen senators by serving a notice in writing upon the presiding officer, may demand a vote as to whether debate should be limited. The question is to be up two days later without debate and a two-thirds vote restricts subsequent debate to one hour for each senator, and, except with the unanimous consent of the Senate, no amendments or substitutes for the measure in question can be considered following this action. The Senate adopted the new rule by a vote of 76 to 3. Senators La Follette of Wisconsin, Gronna of North Dakota, and Sherman of Illinois voted against it.

The rapid march of events produced by complete alterations in the situation between Germany and the United States, induced the president to change the date of the special session of the Sixty-Fifth Congress from April 16 to April 2. On that date, he appeared before the joint session and read an address asking for authority to declare war against Germany. This address will be found in the article UNITED STATES AND THE WAR.

The strength of the Republicans and Democrats in the House was so nearly equal that for a time it was doubtful which party would control. Finally, as the result of an action of three independent members, Champ Clark was again elected speaker.

The text of the resolution declaring war on Germany and a discussion of its adoption will be found in the article UNITED STATES AND THE WAR. See also WAR OF THE NATIONS, *The Diplomacy of the War.*

Congress at once began consideration of measures relating to the prosecution of the war, which the president desired passed. These included a bill for compulsory military service and an Espionage Bill providing for drastic restrictions on the activities of the press. Bills were also introduced empowering the president to control the operation of private-owned railroads during the war; to control telegraph and telephone lines; to use the army for the protection of railroad lines; and to draft employees of railroad, telegraph, and telephone companies into the national service.

On April 14 the House passed, without a dissenting vote, a measure authorizing the largest loan ever voted at one time by any legislative body in the world. This authorized a bond issue of $7,000,000,000. See FINANCIAL REVIEW.

On April 21, the Senate took up consideration of the Army Bill, and on April 23 consideration of the measure was begun in the House. The principle of conscription was strongly attacked by Speaker Clark on April 25, while the strongest advocate of a selective conscription system was Representative Kahn of California, a Republican.

On April 28, both the House and the Senate passed the bill for raising an army of 500,000 men by selective conscription: the Senate by a vote of 81 to 8, and the House by 397 to 24. In the Senate measure, the age of those conscripted was placed at the age of from 21 to 27 and in the House between 21 and 40.

The Senate on April 30 adopted a resolution authorizing the government to take title to the German ships in the harbors of the United States. On the same day there was introduced into the House the first of the Food Control Bills prepared by the administration. This provided $25,000,000 and conferred broad powers upon the secretary of agriculture for the conservation of food resources. The Appropriations Committee, on the same day, reported a bill authorizing the expenditure of $2,700,000,000 for army and navy purposes.

On May 1, René Viviani, leader of the French visiting conference commission, addressed the Senate. Two days later he addressed the House. On the same day there was introduced into the House a measure conferring power upon the president to fix maximum and minimum prices for food, fuel, etc., to regulate production and distribution, and to requisition establishments.

On May 4, the House passed the Espionage Bill after having modified the censorship provisions.

On the following day the House was addressed by Arthur J. Balfour, British secretary of state for foreign affairs and principal member of the mission to the United States. The House on May 7 passed a bill, already passed by the Senate, authorizing the operation of seized German vessels.

Mr. Balfour, on May 8, addressed the Senate. The House passed, on the same day, a bill increasing the strength of the navy from 87,000 to 150,000, and the marine corps to 30,000.

The House, on May 10, began debate on the War Taxation Bill designed to raise $1,800,000,000 annually. The House, on May 12, voted to instruct its conferees on the Army Bill to agree to the provision adopted by the Senate, authorizing the president to accept a volunteer division of troops to be raised by Theodore Roosevelt.

The Senate, on May 14, passed the Espionage Bill after having eliminated the section relating to the censorship, and an amendment prohibiting the use of foodstuffs in alcoholic liquors. On May 15, the Senate passed a bill, already passed by the House, increasing the personnel of the marine corps. The Financial Committee, on the same day, reported the measure authorizing the expenditure of $3,390,946,000 for the army, navy, and shipping.

On May 16, the House finally passed the Selective Conscription Bill, with age liability from 21 to 30 inclusive, and on the following day, the Senate took similar action. The Senate, on May 19, passed, without a roll call, the General War Appropriation Bill authorizing the expenditure of $3,342,300,000.

The Senate, on May 22, passed a bill appropriating $50,000,000 for the establishment of the Bureau of War Risk Insurance in the Treasury Department, with the power not only to insure ships and cargo, but crews. Also on the same day, the Senate passed a bill increasing the number of Interstate Commerce Commissioners from 7 to 9, and permitting rules to be made by sub-divisions of the commission.

In the House on the same date, a letter was read from the president in which he declared it necessary that he should be given authority to exercise censorship over the press. The House, on the following day, passed, by a vote of 329 to 76, the War Taxation Bill, estimated to yield $1,857,000,000 per year in additional revenue. The House, on May 28, passed the first of the Food Administration Bills advocated by the administration. This measure appropriated $15,000,000 for a food survey or census for distributing seeds, and for educational work to stimulate production and decrease waste.

The Senate, three days later, adopted a drastic provision against the hoarding of food and other necessities as an amendment to the Food Survey Bill.

The House, on the same day, defeated the press censorship measure by a vote of 184 to 144.

On June 2, the Senate passed the Food Bill, already passed by the House. On June 15 that body approved the Espionage Bill with a clause authorizing the president to use an embargo power against neutrals in order to limit their importation of materials likely to reach the enemy, and also to compel them to furnish in return articles needed by the Allies.

June 14 and 15 were taken up by debate on the Railroad Control Bill in the Senate. Senators Lodge and Reed criticized the tendency to centralize legislative powers in the president. The Senate, on June 16, passed a measure giving the president power to enforce preferential shipping in interstate commerce of such commodities as he may from time to time designate.

On June 22, Baron Moncheur, head of the Belgian mission to the United States, addressed the Senate, and on the following day both branches of Congress were addressed by Boris Bakhmetieff, Russian Ambassador, and head of the Russian mission to the United States.

On the same day the House passed the second Food Administration Bill, placing broad power in the hands of the president. By a vote of 365 to 5, an amendment was adopted forbidding the use of food materials in the production of alcoholic beverages. The House, on June 27, passed a River and Harbor Appropriation Bill carrying $27,000,000, and the measure already passed by the Senate increasing the Interstate Commerce Commission from 7 to 9 members.

In the Senate, on July 3, Senator Simmons, chairman of the Financial Committee, introduced a war revenue measure estimated to raise $1,670,000,000, as compared with $1,810,420,000 carried by the measure prepared by the House. The Senate, after a debate, lasting for several days, adopted an amendment to the Food Administration Bill, prohibiting the manufacture and importation of whiskey during the war and directing the seizure of whiskey in bond at cost plus 10 per cent profit for the owners. The amendment was passed by a vote of 45 to 37.

On July 11, the House passed, without roll call, a measure regulating all trading with the enemy, known as the "Trading with the Enemy" Act. See FINANCIAL REVIEW.

The House, on July 14, passed without opposition, a bill appropriating $640,000,000 for the construction and operation of aëroplanes.

The Senate, on July 19, adopted an amendment to the Food Control Bill, placing the authority in three men instead of one. On July 22, that body adopted a bill establishing government control over foods and fuel, by a board of three members. It fixed a minimum price of $2 per bushel on 1918 wheat; prohibited the use of food materials in the production of distilled liquors and created a joint Congress Committee of ten members on "expenditures in the conduction of the war." The bill appropriating $640,000,000 for aircraft, passed by the House, was adopted without change, on the same date. The Senate, on July 26, passed the Rivers and Harbors Appropriation Bill carrying $28,000,000.

On August 2, the Senate, by a vote of 65 to 20, adopted the prohibition amendment. By the terms of the resolution, an amendment to the Federal constitution prohibiting the manufacture, sale, transportation, importation, or exportation of intoxicating liquors, is to be submitted to the States. It is not to be put into operation unless ratified within six years by two-thirds of the State legislatures. On the following day, the Senate adopted, without discussion, a resolution requesting the president to seek permission from foreign governments to apply the Selective Draft Law to their citizens in the United States. The Conference Committee of the Senate and the House, on the Food Administration Bill, on the same day, reached an agreement. The provisions for a Food Control Board of three members and for a Board on War Expenditures were adopted.

The House, on the following day, adopted the conference report on the Food Control and Food Survey Bills.

The Senate Financial Committee, on August 6, for the second time, reported the War Revenue Bill, which had been revised. The measure as re-read would yield $2,600,970,000, an increase of $337,000,000 over the amount carried in the former bill. The Senate, on August 8, adopted the conference report on the Food Control and Food Survey Bills. Senator La Follette, on August 11, introduced a resolution demanding a "re-statement of Allied peace terms based on the disavowal of advantages in the way of indemnities, territorial acquisitions, commercial privileges, or economic prerogatives."

The Financial Committee of the Senate and the House were informed, on August 9, by Mr. McAdoo, secretary of the treasury, that it would be necessary to raise by bond $9,000,000,000, in addition to the $1,700,000,000 already authorized, and by taxation $1,000,000,000 in addition to the $2,000,000,000 already provided for in the revenue measure.

Debate on the War Revenue Bill occupied the attention of Congress until the middle of September. A full discussion of this measure will be found in the article TAXATION.

On September 5, Viscount Ishii, special Ambassador from Japan, addressed the House.

The House, on September 6, passed a bill providing for a bond issue of $11,538,945,460, which includes a loan of $4,000,000,000 to be made to the Allied governments, and on September 10, the Senate passed the War Revenue Bill by a vote of 69 to 4. The senators who voted against it were La Follette, Borah, Gronna, and Norris, all Republicans.

The bitterest fight in the Senate came over the item of taxes on excess war profits. The Finance Committee had provided for graduated taxes on the excess of profits over the average of the years 1911, 1912, 1913. The radical senators, including La Follette, Johnson, Gore, and others, wished to place much higher rates on excess profits, but in the final vote the conservative senators won. The bill as passed provided for $2,416,000,000 in new taxes in addition to $1,335,500 to be raised under laws already existing.

The Senate, on September 12, passed a resolution authorizing the president to draft alien residents for military service. On the same day it passed the "Trading with the Enemy" Bill with an amendment requiring newspapers published in German to print an English translation of contents on the war.

The House, on September 13, passed a Soldiers' and Sailors' Insurance and Compensation Bill, after important amendments had been made. See INSURANCE.

The Senate, on September 15, passed without a roll call the Bond Bill carrying $11,538,000,000.

The House, on September 18, adopted the War Deficiency Bill carrying $7,000,000,000, and included appropriations for the army, navy, and ships. On September 20, the Senate adopted the conference report on the Bond Bill and the Senate and the House conferees wrote in the "Trading with the Enemy" Bill a provision for censorship of mail and telegraph communications with foreign countries.

The Senate, on September 24, adopted the conference report on the "Trading with the Enemy" Bill, and on the following day this report was also adopted by the House.

On September 28, the House passed a bill permitting foreign ships to engage in American coastwise trade during the war. The Senate and the House conferees on the war revenue measure on September 29, reached an agreement. Many of its provisions were rewritten in conference. The revised measure is estimated to produce by additional taxation $2,535,000,000 annually.

On October 1, the House adopted this report, and on the following day the Senate took similar action. The Senate, on October 3, adopted, without debate, the conference report on the Urgent Deficiency Bill carrying authorizations of $7,657,000,000 for war expenditures.

The Senate, on October 4, adopted an amendment to the Soldiers' and Sailors' Insurance Bill reviving the rank of general for the commander of the American troops in France, and for the chief of staff. The House, on the same date, adopted the Urgent Deficiency Bill.

The Senate, on October 5, adopted the conference report on the Soldiers' and Sailors' Insurance Bill, and passed a measure permitting foreign ships to engage in coastwise trade.

Senator La Follette, on October 6, made a long address in the Senate, in which he defended his criticism of the administration's war policy. His action was severely criticized in a speech by Senators Kellogg of Minnesota and Robinson of Arkansas. A special committee of five was appointed to investigate charges of disloyalty against Senator La Follette. On the same day the special session of the Sixty-Fifth Congress came to an end. The appropriations made aggregated $21,000,000,000. It was in many respects the most important session of Congress ever held.

The Sixty-Fifth Congress, Second Session. The second session of the Sixty-Fifth Congress convened on December 3, 1917, and on the following day the president appeared before the joint session and read his message giving the reasons why a state of war should be declared with Austria-Hungary. See United States and the War; War of the Nations.

On December 6, the Foreign Relations Committee of the Senate met to consider the portion of the message which urged an immediate declaration of war with Austria-Hungary, and on December 5, the Foreign Affairs Committee of the House entered upon a consideration of a similar resolution. Senator Owen of Oklahoma, on December 4, introduced a measure creating the "American Legion of Honor," with a life membership restricted to 200, the members to be named by the president and confirmed by the Senate. Membership in the Legion would be a reward "for very distinctive service" rendered either in the military service or by civilians.

On December 6, the Committee of Foreign Affairs of the House, made a favorable report on the resolution declaring war with Austria, and on December 7, the joint resolution was passed (see the article United States and the War). In the Senate the resolution passed without debate by a vote of 74 to 0.

On December 14, the Military Committee of the Senate voted to institute a general inquiry into the operations of the War Department in the matter of arming and equipping the American military forces. On the same day, Senator Lodge introduced a resolution which was adopted providing for the investigation of the shortage in sugar and coal. A national prohibition amendment to the Constitution was favorably reported to the House from the Judiciary Committee by a vote of 15 to 5.

On December 13, the Senate Committee on Manufactures began hearings in the cases of the shortage of coal and sugar. See Coal; Sugar.

On December 16, the session of the House was devoted to the consideration of the national prohibition amendment and on the same day passed the bill (see Liquor Regulation). The vote was 282 to 128. The Senate, by a rising vote of 47 to 8, concurred the House amendment.

On December 18, the Senate passed two resolutions for additional investigations. These included an inquiry into the control of the transportation companies of the country and into the condition of their affairs by the United States Shipping Board.

Congress adjourned over the holidays on December 21, but the committees of inquiry continued their session.

Congressional Membership. The following table gives the membership and political affiliation of the members of the Sixty-Fifth Congress:

[Democrats in roman; Republicans in *italics*; Progressives in small caps; Progressive and Republican in *italics* with *; Independent in CAPS; Prohibitionist in roman with *; Socialist in **black letter**; Progressive-Protectionist in CAPS with *; Progressive-Democrat in small caps with *; Nonpartisan in *ITALIC CAPS*.]

ALABAMA.—Senators: John H. Bankhead, Oscar W. Underwood. Representatives (Democrats, 10): Oscar L. Gray, S. Hubert Dent, Jr., Henry B. Steagall, Fred L. Blackmon, J. Thomas Heflin, William B. Oliver, John L. Burnett, Edward B. Almon, George Huddleston, William B. Bankhead.

ARIZONA.—Senators: Henry F. Ashurst, Marcus A. Smith. Representative (Democrat, 1): At large, Carl Hayden.

ARKANSAS.—Senators: Joseph T. Robinson, William F. Kirby. Representatives (Democrats, 7): Thaddeus H. Caraway, William A. Oldfield, John N. Tillman, Otis Wingo, Henderson M. Jacoway, Samuel M. Taylor, William S. Goodwin.

CALIFORNIA.—Senators: James D. Phelan, *Hiram W. Johnson.** Representatives (Democrats, 4; Republicans, 6; Prohibitionist, 1): Clarence F. Lea, John E. Raker, *Charles F. Curry*, *Julius Kahn*, *John I. Nolan*, *John A. Elston*, Denver S. Church, *Everis A. Hayes*, Charles H. Randall,* *Henry Z. Osborne*, William Kettner.

COLORADO.—Senators: Charles S. Thomas, John F. Shafroth. Representatives (Democrats, 3; Republicans, 1): Benjamin C. Hilliard, *Charles B. Timberlake*, Edward Keating, Edward T. Taylor.

CONNECTICUT.—Senators: *Frank B. Brandegee*, *George P. McLean*. Representatives (Democrat, 1; Republicans, 4): Augustine Lonergan, *Richard P. Freeman*, *John Q. Tilson*, *Schuyler Merritt*, *James P. Glyn*.

DELAWARE.—Senators: Williard Saulsbury, Josiah O. Wolcott. Representative (Democrat, 1): At large, Albert F. Polk.

FLORIDA.—Senators: Duncan U. Fletcher, Park Trammell. Representatives (Democrats, 4): Herbert J. Drane, Frank Clark, Walter Kehoe, William J. Sears.

GEORGIA.—Senators: Hoke Smith, Thomas W. Hardwick. Representatives (Democrats, 12): James W. Overstreet, Frank Park, Charles R. Crisp, William C. Wright, William S. Howard, James W. Wise, Gordon Lee, Charles H. Grand, Thomas M. Bell, Carl Vinson, J. Randall Walker, William W. Larsen.

IDAHO.—Senator: *William E. Borah*. Representatives (Republicans, 2): At large, *Burton L. French*, *Addison T. Smith*.

ILLINOIS.—Senators: Jas. Hamilton Lewis, *Lawrence Y. Sherman*. Representatives (Democrats, 5; Republicans, 21; Vacancy, 1): At large, *Medul McCormick*, *William E. Mason*; *Martin B. Madden*, *James R. Mann*, *William W. Wilson*, Adolph J. Sabath, James McAndrews, *Niels Juul*, Thomas Gallagher, *Fred A. Britten*, *George E. Foss*, *Ira C. Copley*, *Charles E. Fuller*, *John C. McKenzie*, *William J. Graham*, *Edward J. King*, *Clifford Ireland*, *John A. Sterling*, *Joseph G. Cannon*, *William B. McKinley*, Henry T. Rainey, *Loren E. Wheeler*, *William A. Rodenberg*, Martin D. Foster, *Thomas S. Williams*, *Edward E. Denison*.

INDIANA.—Senators: *James E. Watson*, *Harry S. New*. Representatives (Democrats, 4; Republicans, 9): George K. Denton, *Oscar E. Bland*, William E. Cox, Lincoln Dixon, *Everett Sanders*, *Richard N. Elliott*, *Merrill Moores*, *Albert H. Vestal*, *Fred S. Purnell*, *William R. Wood*, *Milton Kraus*, *Louis W. Fairfield*, Henry A. Barnhart.

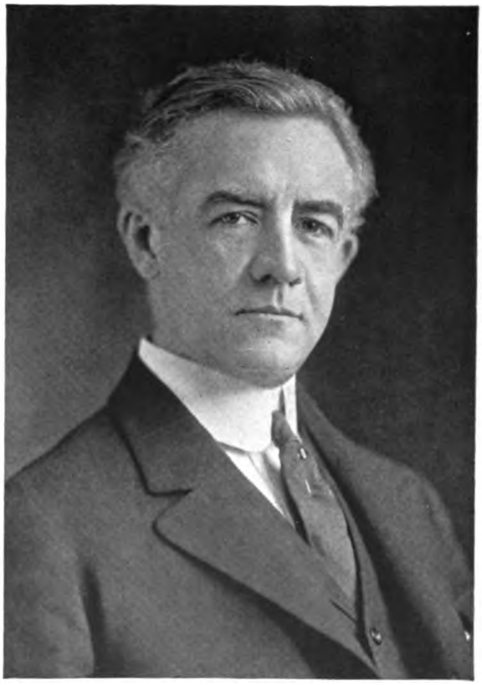
IOWA.—Senators: *Albert B. Cummins*, *William S. Kenyon*. Representatives (Republicans, 11): *Charles A. Kennedy*, *Harry E. Hull*, *Burton E. Sweet*, *Gilbert N. Haugen*, *James W. Good*, *C. William Ramseyer*, *Cassius C. Dowell*, *Horace M. Towner*, *William R. Green*, *Frank P. Woods*, *George C. Scott*.

KANSAS.—Senators: William H. Thompson, *Charles Curtis*. Representatives (Democrats, 5; Republicans, 3): *Daniel R. Anthony, Jr.*, *Edward C. Little*, *Philip P. Campbell*, Dudley Doolittle.

JOHN W. WEEKS
Massachusetts

FRANCIS D. NEWLANDS
Nevada
Died, December 24, 1917

GEORGE E. CHAMBERLAIN
Oregon



GILBERT M. HITCHCOCK
Nebraska

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FOUR UNITED STATES SENATORS PROMINENT IN 1917

Guy T. Helvering, John R. Connelly, Jouett Shouse, William A. Ayres.

KENTUCKY.—SENATORS: Ollie M. James, J. C. W. Beckham. REPRESENTATIVES (Democrats, 9; Republicans, 2): Alben W. Barkley, David H. Kincheloe, Robert Y. Thomas, Jr., Ben Johnson, Swager Sherley, A. B. Rouse, J. Campbell Cantrill, Harvey Helm, William J. Fields, *John W. Langley, Caleb Powers.*

LOUISIANA.—SENATORS: Joseph E. Ransdell, Robert F. Broussard. REPRESENTATIVES (Democrats, 7; Progressive-Protectionist, 1): Albert Estopinal, H. Garland Dupré, WHITMELL P. MARTIN,* John T. Watkins, Riley J. Wilson, Jared Y. Sanders, Ladislas Lazaro, James B. Aswell.

MAINE.—SENATORS: *Bert M. Fernald, Frederick Hale.* REPRESENTATIVES (Republicans, 4): *Louis B. Goodall, Wallace H. White, Jr., John A. Peters, Ira G. Hersey.*

MARYLAND.—SENATORS: John Walter Smith, *Joseph I. France.* REPRESENTATIVES (Democrats, 4; Republicans, 2): Jesse D. Price, J. Fred. C. Talbott, Charles P. Coady, J. Charles Linthicum, *Sydney E. Mudd, Frederick N. Zihlman.*

MASSACHUSETTS.—SENATORS: *Henry Cabot Lodge, John W. Weeks.* REPRESENTATIVES (Democrats, 4; Republicans, 11; Independent, 1): *Allen T. Treadway, Frederick H. Gillett, Calvin D. Paige, Samuel E. Winslow, John Jacob Rogers, Willfred W. Lufkin,* Michael F. Phelan, *Frederick W. Dallinger,* ALVAN T. FULLER, Peter F. Tague, *George Holden Tinkham,* James A. Gallivan, *William H. Carter,* Richard Olney, *William S. Greene, Joseph Walsh.*

MICHIGAN.—SENATORS: *William Alden Smith, Charles E. Townsend.* REPRESENTATIVES (Democrats, 2; Republicans, 11): Frank E. Doremus, Samuel W. Beakes, *J. M. C. Smith, Edward L. Hamilton, Carl E. Mapes, Patrick H. Kelley, Louis C. Cramton, Joseph W. Fordney, James C. McLaughlin, Gilbert A. Currie, Frank D. Scott, W. Frank James, Charles A. Nichols.*

MINNESOTA.—SENATORS: *Knute Nelson, Frank B. Kellogg.* REPRESENTATIVES (Democrat, 1; Republicans, 8; Progressive, 1): *Sydney Anderson, Franklin F. Ellsworth, Charles R. Davis,* Carl C. Van Dyke, *Ernest Lundeen, Harold Knutson, Andrew J. Volstead, Clarence B. Miller, Halvor Steenerson,* THOMAS D. SCHALL.

MISSISSIPPI.—SENATORS: John Sharp Williams, James K. Vardaman. REPRESENTATIVES (Democrats, 8): Ezekiel S. Candler, Hubert D. Stephens, Benjamin G. Humphreys, Thomas U. Sisson, William W. Venable, Pat Harrison, Percy E. Quin, James W. Collier.

MISSOURI.—SENATORS: William J. Stone, James A. Reed. REPRESENTATIVES (Democrats, 14; Republicans, 2): Milton A. Romjue, William W. Rucker, Joshua W. Alexander, Charles F. Booher, William P. Borland, Clement C. Dickinson, Courtney W. Hamlin, Dorsey W. Shackleford, Champ Clark, *Jacob E. Meeker,* William L. Igoe, *Leonidas C. Dyer,* Walter L. Hensley, Joseph J. Russell, Perl D. Decker, Thomas L. Rubey.

MONTANA.—SENATORS: Henry L. Myers, Thomas J. Walsh. REPRESENTATIVES (Democrat, 1; Republican, 1): At large, John M. Evans, *Jeannette Rankin.*

NEBRASKA.—SENATORS: Gilbert M. Hitchcock, *George W. Norris.* REPRESENTATIVES (Democrats, 3; Republicans, 3): *C. Frank Reavis,* Charles O. Lobeck, Dan V. Stephens, *Charles H. Sloan,* Ashton C. Shallenberger, *Moses P. Kinkaid.*

NEVADA.—SENATORS: Key Pittman, Charles B. Henderson. REPRESENTATIVE (Republican, 1): At large. *E. E. Roberts.*

NEW HAMPSHIRE.—SENATORS: *Jacob H. Gallinger,* Henry F. Hollis. REPRESENTATIVES (Republicans, 2): *Sherman E. Burroughs, Edward H. Wason.*

NEW JERSEY.—SENATORS: William Hughes, *Joseph S. Frelinghuysen.* REPRESENTATIVES (Democrats, 8; Republicans, 9): *William J. Browning, Isaac Bacharach,* Thomas J. Scully, *Elijah C. Hutchinson, John H. Capstick, John R. Ramsey, Dow H. Drukker, Edward W. Gray, Richard Wayne Parker, Frederick R. Lehlbach,* John J. Eagan, James A. Hamill.

NEW MEXICO.—SENATORS: *Albert B. Fall.* Andrieus A. Jones. REPRESENTATIVE (Democrat, 1): At large. William B. Walton.

NEW YORK.—SENATORS: *James W. Wadsworth, Jr., William M. Calder.* REPRESENTATIVES (Democrats, 12; Republicans, 26; Socialist, 1; Vacancies, 4): *Frederick C. Hicks,* Chas. Pope Caldwell, Joseph V. Flynn, Harry H. Dale, James P. Maher, *Frederick W. Rowe, Oscar Wm. Swift, Reuben L. Haskell,* Daniel J. Riordan, **Meyer London,** Christopher D. Sullivan, *Fiorello H. LaGuardia,* Thomas F. Smith, Peter J. Dooling, John F. Carew, *George B. Francis, Walter M. Chandler, Isaac Siegel,* Daniel C. Oliver, *Benjamin L. Fairchild, James W. Husted, Edmund Platt, Charles B. Ward, Rollin B. Sanford, James S. Parker,* George R. Lunn, *Bertrand H. Snell, Luther W. Mott, Homer P. Snyder, George W. Fairchild, Walter W. Magee, Norman J. Gould, Harry H. Pratt, Thomas B. Dunn, Archie D. Sanders, S. Wallace Dempsey,* Charles B. Smith, *William F. Waldow, Charles M. Hamilton.*

NORTH CAROLINA.—SENATORS: F. M. Simmons, Lee S. Overman. REPRESENTATIVES (Democrats, 10): John H. Small, Claude Kitchin, George E. Hood, Edward W. Pou, Charles M. Stedman, Hannibal L. Godwin, Leonidas D. Robinson, Robert L. Doughton, Edwin Y. Webb, Zebulon Weaver.

NORTH DAKOTA.—SENATORS: *Porter J. McCumber, Asle J. Gronna.* REPRESENTATIVES (Republicans, 2; Non-partisan, 1): *JOHN M. BAER, George M. Young, Patrick D. Norton.*

OHIO.—SENATORS: Atlee Pomerene, *Warren G. Harding.* REPRESENTATIVES (Democrats, 12; Republicans, 9; vacancy, 1): *Nicholas Longworth, Victor Heintz,* Warren Gard, Benjamin F. Welty, John S. Snook, *Charles C. Kearns, Simeon D. Fess,* John A. Key, Isaac R. Sherwood, *Robert M. Switzer,* Horatio C. Claypool, Clement Brumbaugh, Arthur W. Overmyer, George White, *Roscoe C. McCulloch,* William A. Ashbrook, *David A. Hollingsworth, John G. Cooper,* William Gordon, Robert Crosser, *Henry I. Emerson.*

OKLAHOMA.—SENATORS: Thomas P. Gore, Robert L. Owen. REPRESENTATIVES (Democrats, 6; Republicans, 2): *Thomas A. Chandler,* William W. Hastings, Charles D. Carter, Tom D. McKeown, Joseph B. Thompson, Scott Ferris, James V. McClintic, *Dick T. Morgan.*

OREGON.—SENATORS: George E. Chamberlain, *Charles L. McNary.* REPRESENTATIVES (Republicans, 3): *Willis C. Hawley, Nicholas J. Sinnott, Clifton N. McArthur.*

PENNSYLVANIA.—SENATORS: *Boies Penrose, Philander C. Knox.* REPRESENTATIVES (Democrats, 7; Republicans, 28; Independent, 1): At large, *Thomas S. Crago, Mahon M. Garland, Joseph McLaughlin, John R. K. Scott; William S. Vare, George S. Graham, J. Hampton Moore, George W. Edmonds, Peter E. Costello, George P. Darrow, Thomas S. Butler, Henry W. Watson, W. W. Griest, John R. Farr, Thomas W. Templeton, Robert D. Heaton,* Arthur G. Dewalt, *Louis T. McFadden, Edgar R. Kiess,* John V. Lesher, *Benjamin K. Focht, Aaron S. Kreider, John M. Rose,* Andrew R. Brodbeck, *Charles H. Rowland, Edward E. Robbins,* Bruce F. Sterling, *Henry W. Temple, Henry A. Clark,* Henry J. Steele, *Nathan L. Strong,* Earl H. Beshlin, *Stephen G. Porter,* M. CLYDE KELLY, *John M. Morin,* Guy E. Campbell.

RHODE ISLAND.—SENATORS: *LeBaron B. Colt.* Peter G. Gerry. REPRESENTATIVES (Democrat, 1; Republicans, 2): George F. O'Shaunessy, *Walter R. Stiness, Ambrose Kennedy.*

SOUTH CAROLINA.—SENATORS: Benjamin R. Tillman, Ellison D. Smith. REPRESENTATIVES (Democrats, 7): Richard S. Whaley, James F. Byrnes, Fred H. Dominick, Samuel J. Nicholls, William F. Stevenson, J. Willard Ragsdale, Asbury F. Lever.

SOUTH DAKOTA.—SENATORS: *Thomas Sterling,* Edwin S. Johnson. REPRESENTATIVES (Democrat, 1; Republicans, 2): *Charles H. Dillon, Royal C. Johnson,* Harry L. Gandy.

TENNESSEE.—SENATORS: John K. Shields, Kenneth McKellar. REPRESENTATIVES (Democrats, 8; Republicans, 2): *Sam R. Sells, Richard W. Austin,* John A. Moon, Cordell Hull, William C. Houston, Joseph W. Byrns, Lemuel P. Padgett, Thetus W. Sims, Finis J. Garrett, Hubert F. Fisher.

TEXAS.—SENATORS: Charles A. Culberson, Morris Sheppard. REPRESENTATIVES (Democrats, 18): At large, Jeff. McLemore, Daniel E. Garrett; Eugene Black, Martin Dies, James Young, Sam Rayburn, Hatton W. Sumners, Rufus Hardy, Alexander W. Gregg, Joe H. Eagle, Joseph J. Mansfield, James P. Buchanan, Tom Connally, James C. Wilson, Marvin Jones, James L. Slayden, John N. Garner, Thomas L. Blanton.

UTAH.—SENATORS: *Reed Smoot,* William H. King. REPRESENTATIVES (Democrat, 1; Progressive-Democrat, 1): Milton H. Welling, JAMES H. MAYS.*

VERMONT.—SENATORS: *William P. Dillingham, Carroll S. Page.* REPRESENTATIVES (Republicans, 2): *Frank L. Greene, Porter H. Dale.*

VIRGINIA.—SENATORS: Thomas S. Martin, Claude A. Swanson. REPRESENTATIVES (Democrats, 9; Republican, 1): William A. Jones, Edward E. Holland, Andrew J. Montague, Walter A. Watson, Edward W. Saunders, Carter Glass, Thomas W.

Harrison, Charles C. Carlin, *C. Bascom Slemp*, Henry D. Flood.

WASHINGTON.—SENATORS: *Wesley L. Jones. Miles Poindexter.* REPRESENTATIVES (Democrat, 1; Republicans, 4): *John F. Miller. Lindley H. Hadley, Albert Johnson, William L. La Follette*, C. C. Dill.

WEST VIRGINIA.—SENATORS: *Nathan Goff, Howard Sutherland.* REPRESENTATIVES (Democrats, 2; Republicans, 4): M. M. Neely, *George M. Bowers, Stuart F. Reed, Harry C. Woodyard. Edward Cooper*, Adam B. Littlepage.

WISCONSIN.—SENATOR: *Robert M. La Follette.* REPRESENTATIVES (Republicans, 11): *Henry Allen Cooper, Edward Voigt. John M. Nelson. William J. Cary. William H. Stafford. James H. Davidson. John J. Esch, Edward E. Browne. David G. Classon. James A. Frear. Irvine L. Lenroot.*

WYOMING.—SENATORS: *Francis E. Warren*, John B. Kendrick. REPRESENTATIVE (Republican, 1): At large, *Frank W. Mondell.*

ALASKA.—Charles A. Sulzer.

HAWAII.—*J. Kuhio Kalanianaole.*

PHILIPPINES.—Jaime C. De Veyra, Teodoro R. Yangco.

PORTO RICO.—Felix Cordova Davila.

CLASSIFICATION

SENATE		HOUSE	
Democrats	52	Democrats	209
Republicans	41	Republicans	212
Republican and Progressive	1	Progressive	1
Vacancies	2	Independents	2
		Socialist	1
		Prohibitionist	1
		Progressive-Protectionist	1
		Progressive-Democrat	1
		Non-partisan	1
		Vacancies	6
Total	96	Total	435

POLITICAL PARTIES. A convention of the Progressive party in combination with radicals from other parties, opened in St. Louis on April 13. The fundamental purpose of the meeting was to organize the liberal forces of the nation into a common League of Liberals, which would continue the work of reform outlined in the 1912 platform of the National Progressive Party. The delegates announced a war platform for liberals which included the declaration of universal military service, graduated taxation, freedom of political discussion, and no retrenchment of expenditures for education and research. It advocated national regulation of the food supply, and of labor conditions in industry.

On October 3, representatives of the National Progressive Party, supporters of the single tax, and some members of the Socialist Party met in Chicago to discuss the organization of the new Radical Party. Each of the four groups was assigned twenty votes in the convention. Delegates decided to arrange for coöperation in Congressional elections of 1918. Among those who were prominent at the meeting were Matthew Hale, chairman of the National Committee of the Progressive Party, Dr. Landrith, Prohibitionist candidate for vice-president in 1916, and John Spargo, Socialist author. Spargo suggested a platform which contained recommendations for universal suffrage, the initiative, referendum, and recall, the short ballot, executive budget and proportional representation, an easier method of securing constitutional amendments, national prohibition, public ownership of mines, railroads, telegraphs, and telephones, the extinction of land monopolies, and the abolition of secret diplomacy and international federation. He and others emphasized the loyalty of the conference to the American cause in the great war, and declared that pro-Germans would not be welcome to the new party.

The declaration of war with Germany, and the preparations leading to a state of hostilities, had a profound effect upon the Socialist Party in the United States. On account of the attitude of the organization in opposition to selective draft and other phases of the war programme of the United States, the best-known leaders of the party withdrew from affiliation with it. These included John Spargo, Robert Hunter, and others of that type. It thus left the control of the party in the hands of the ultra-radical group, whose most conspicuous member was Victor L. Berger, of Milwaukee.

As is noted in the article NEW YORK, Morris Hillquit was nominated for mayor by the Socialist Party, and polled a large vote, which indicated a very considerable growth in Socialist sentiment in that city.

On September 24, 1917, the Socialist Party National Council went out of existence. The affairs of the Socialist Party were placed in the hands of a National Executive Council consisting of four members, Morris Hillquit of New York, Victor L. Berger of Milwaukee, John M. Work of Chicago, and Anna A. Maley of Minnesota. A newly adopted constitution provided for five members, but John Spargo, named as the fifth member, declined to serve. Under the new constitution, the country is divided into five districts and three men are to be elected from each district. The call for nominations was sent out for January 1, 1918, and the members of the council will begin their term of office on July 1, 1918.

STATE LEGISLATURES. The following list shows the present complexion of the legislatures of the various States in 1917:

Alabama.—The legislature is almost wholly Democratic.

Arkansas.—The legislature is almost wholly Democratic.

California.—A Republican majority of 56 on joint ballot.

Connecticut.—A Republican majority of 145 on joint ballot.

Delaware.—A majority of 3 Republicans in the Senate and 3 Democrats in the House.

Georgia.—The legislature is almost wholly Democratic.

Idaho.—A Democratic majority of 12 on joint ballot.

Illinois.—A Republican majority of 3 on joint ballot.

Indiana.—A Republican majority of 28 on joint ballot.

Iowa.—A Republican majority of 110 on joint ballot.

Kansas.—A Republican majority of 107 on joint ballot.

Kentucky.—A Democratic majority of 33 on joint ballot.

Louisiana.—The legislature is almost wholly Democratic.

Maine.—A Republican majority of 84 on joint ballot.

Maryland.—No legislative session in 1917.

Massachusetts.—A Republican majority of 114 on joint ballot.

Michigan.—A Republican majority of 96 on joint ballot.

Minnesota.—A non-partisan legislature.

Mississippi.—The legislature is wholly Democratic.

Missouri.—A Democratic majority of 32 on joint ballot.

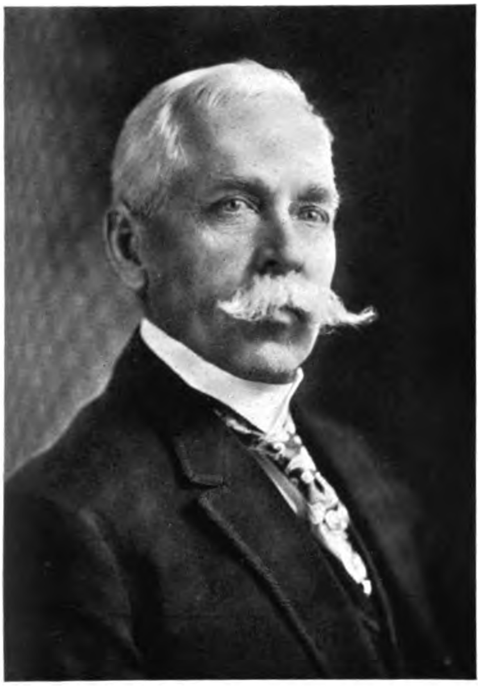
Montana.—A Republican majority of 10 on joint ballot.

Nebraska.—A Democratic majority of 35 on joint ballot.

Nevada.—On joint ballot, Republicans 27, Democrats 26, and Independent 1.

New Hampshire.—A Republican majority of 88 on joint ballot.

New Jersey.—A Republican majority of 41 on joint ballot.



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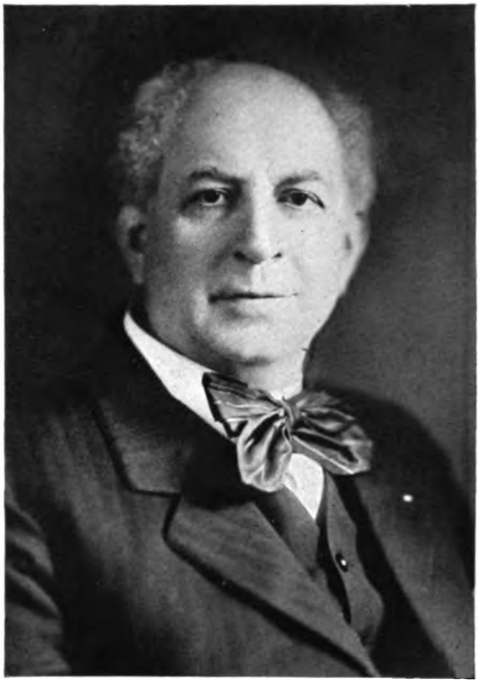
JAMES L. SLAYDEN
Texas



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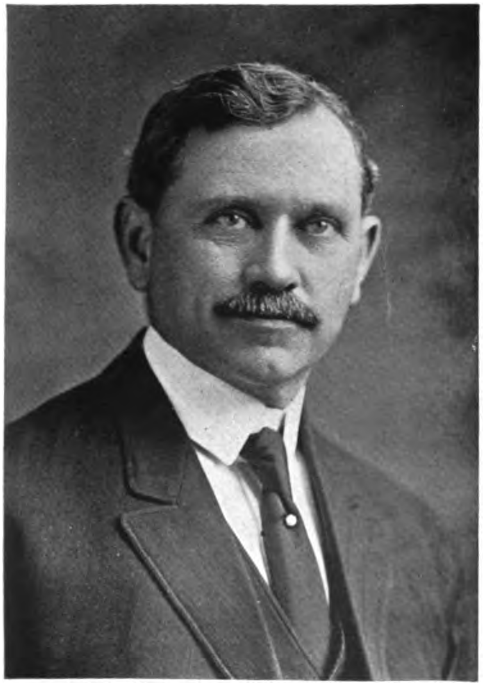
JULIUS KAHN
California



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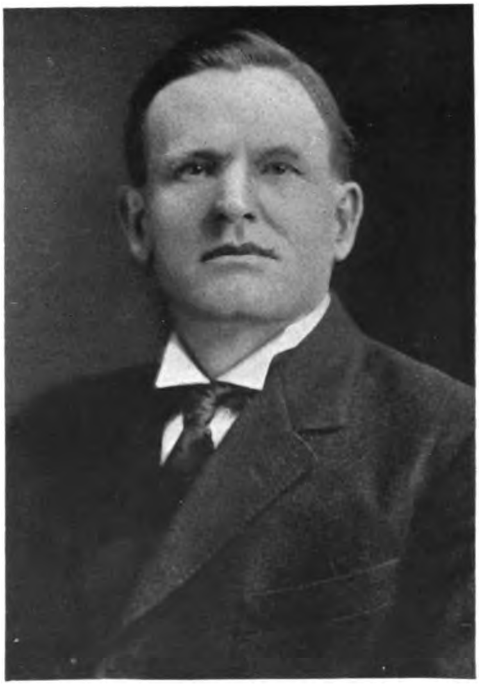
HENRY D. FLOOD
Virginia



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IRVINE L. LENROOT
Wisconsin

FOUR UNITED STATES REPRESENTATIVES PROMINENT IN 1917

New Mexico.—A Republican majority of 13 on joint ballot.

New York.—Republicans 133, Democrats 57, Socialists 10 on joint ballot.

North Carolina.—A Democratic majority of 106 on joint ballot.

North Dakota.—A Republican majority of 118 on joint ballot.

Oklahoma.—A Democratic majority of 91 on joint ballot.

Oregon.—A Republican majority of 68 on joint ballot.

Pennsylvania.—A Republican majority on joint ballot.

Rhode Island.—A Republican majority of 44 on joint ballot.

South Carolina.—The legislature is wholly Democratic.

South Dakota.—A Republican majority of 44 on joint ballot.

Tennessee.—A Democratic majority of 66 on joint ballot.

Texas.—The legislature is wholly Democratic.

Utah.—A Democratic majority of 46 on joint ballot.

Vermont.—A Republican majority of 177 on joint ballot.

Virginia.—A Democratic majority of 108 on joint ballot.

Washington.—A Democratic majority of 101 on joint ballot.

West Virginia.—A Republican majority of 10 in the Senate, and a Democratic majority of 10 in the House.

Wisconsin.—A Republican majority of 75 on joint ballot.

Wyoming.—A Republican majority of 12 on joint ballot.

FOREIGN RELATIONS. The relations of the United States with foreign countries during 1917 were concerned chiefly with the declaration of war with Germany and Austria-Hungary. These are dealt with at length in the article UNITED STATES AND THE WAR, and in the section on *Diplomacy* in the article WAR OF THE NATIONS. The notes given below record the most important happenings in foreign relations aside from the countries of Europe.

The joint commission of American and Mexican officials, which was appointed in 1916 to attempt to adjust the difficulties between the two countries, finished their labors in January, 1917. The American commissioners, Mr. Lane, secretary of the interior, Judge Gray, and John R. Mott, recommended in their report the withdrawal of the Americans operating in Mexico, and the sending of Henry P. Fletcher as Ambassador from the United States to Mexico. They advised, also, that further negotiations with Mexico be carried on through the regular diplomatic channels.

The larger tasks, undertaken by the commission, were left unsettled, owing to the fact of the failure of the Mexican government to ratify the Protocol, which was the result of the deliberations. The problem of guarding the American border was left unsolved, and the question of the international problems of Mexico, which President Wilson desired especially to have considered by the commission, was not touched upon. The commission, however, rendered good service by increasing the confidence and good feeling between the two governments. As a result, President Carranza assumed a more friendly attitude than he had hitherto shown.

Following the recommendations of the commission, arrangements were at once begun to withdraw the American forces from Mexico, and for reducing the number of militia on guard along the frontier.

The last American troops left Mexico in the first week in February. When Gen. Pershing took command at El Paso nearly 4000 refugees followed the American troops across the border. These included some 2000 Mexicans and a number of Chinese, who, in spite of the immigration laws, were admitted temporarily into the United States.

The secretary of war sent Gen. Pershing a letter commending the work of the armies in Mexico, mentioning especially the restraint imposed by both officers and men upon themselves, and their consideration of the people of Mexico and the public authorities of that country.

At about the time of this withdrawal, Henry P. Fletcher started for Mexico to present his credentials to the authorities of the government of Mexico, at Querepare, where the constitutional convention was in session.

The proposed treaty with Colombia, whose ratification by the Senate had been delayed for many months, was again put over to the special session of Congress.

This treaty contains expressions of regrets for the lapse of friendly relations between the two nations, and provides for an appropriation of $25,000,000 to cover the claims of Colombia.

The control of the United States over Santo Domingo, which amounted practically to a protectorate, was continued during 1917. There were no events of special importance. A force of marines was maintained on the island during the year.

On November 2, Secretary Lansing and Viscount Ishii, the special Japanese Ambassador, exchanged notes dealing with the policy of the United States and Japan in regard to China. These notes were as follows:

DEPARTMENT OF STATE,
Washington, November 2, 1917.

EXCELLENCY: I have the honor to communicate herein my understanding of the agreement reached by us in our recent conversations touching the questions of mutual interest to our governments relating to the Republic of China.

In order to silence mischievous reports that have from time to time been circulated it is believed by us that a public announcement once more of the desires and intentions shared by our two governments with regard to China is advisable.

The governments of the United States and Japan recognize that territorial propinquity creates special relations between countries, and, consequently, the government of the United States recognizes that Japan has special interests in China, particularly in the part to which her possessions are contiguous.

The territorial sovereignty of China, nevertheless, remains unimpaired and the government of the United States has every confidence in the repeated assurances of the Imperial Japanese government that while geographical position gives Japan such special interests, they have no desire to discriminate against the trade of other nations or to disregard the commercial rights heretofore granted by China in treaties with other powers.

The governments of the United States and Japan deny that they have any purpose to infringe in any way the independence or territorial integrity of China, and they declare, furthermore, that they always adhere to the principle of the so-called "open door," or equal opportunity for commerce and industry in China.

Moreover, they mutually declare that they are opposed to the acquisition by any government of any special rights or privileges that would affect the independence or territorial integrity of China or that would deny to the subjects or citizens of any country the full enjoyment of equal opportunity in the commerce and industry of China.

I shall be glad to have Your Excellency confirm this understanding of the agreement reached by us.

Accept, Excellency, the renewed assurance of my highest consideration.

(Signed) ROBERT LANSING.

His Excellency VISCOUNT KIKUJIRO ISHII, *Ambassador Extraordinary and Plenipotentiary of Japan, on Special Mission.*

REPLY OF SPECIAL AMBASSADOR

THE SPECIAL MISSION OF JAPAN,
Washington, November 2, 1917.

SIR: I have the honor to acknowledge the receipt of your note of to-day, communicating to me your understanding of the agreement reached by us in our recent conversations touching the questions of mutual interest to our governments relating to the Republic of China.

I am happy to be able to confirm to you, under authorization of my government, the understanding in question set forth in the following terms:

In order to silence mischievous reports that have from time to time been circulated, it is believed by us that a public announcement once more of the desires and intentions shared by our two governments with regard to China is advisable.

The governments of Japan and the United States recognize that territorial propinquity creates special relations between countries, and, consequently, the government of the United States recognizes that Japan has special interests in China, particularly in the part to which her possessions are contiguous.

The territorial sovereignty of China, nevertheless, remains unimpaired, and the government of the United States has every confidence in the repeated assurances of the Imperial Japanese government that while geographical position gives Japan such special interests they have no desire to discriminate against the trade of other nations or to disregard the commercial rights heretofore granted by China in treaties with other powers.

The governments of Japan and the United States deny that they have any purpose to infringe in any way the independence or territorial integrity of China and they declare, furthermore, that they always adhere to the principle of the so-called "open door" or equal opportunity for commerce and industry in China.

Moreover, they mutually declare that they are opposed to the acquisition by any government of any special rights or privileges that would affect the independence or territorial integrity of China or that would deny to the subjects or citizens of any country the full enjoyment of equal opportunity in the commerce and industry of China.

I take this opportunity to convey to you, sir, the assurances of my highest consideration.

(Signed) K. ISHII.

Ambassador Extraordinary and Plenipotentiary of Japan on Special Mission.
Hon. ROBERT LANSING,
Secretary of State.

WAR BOARDS AND COMMISSIONS. The following are the most important boards and commissions having relations to the conduct of the war as they were constituted in January, 1917:

UNITED STATES SHIPPING BOARD

Chairman.—Edward N. Hurley.
Assistant to chairman, Frank B. Lord.
Confidential clerk, John E. Barber.
Confidential clerk, Richard H. Bailey, Jr.
Vice-chairman.—R. B. Stevens.
Commissioners.—
John A. Donald.
Bainbridge Colby.
Charles R. Page.
Secretary.—Lester Sisler.
Director of operations.—Edward F. Carry.
Assistant director of operations.—David L. Ewing.
Assistant to director of operations.—Clifford D. Mallory.
Chief counsel.—Edward B. Burling.
Admiralty counsel.—Alfred Huger.
Chief clerk and disbursing officer.—William L. Soleau.

UNITED STATES SHIPPING BOARD EMERGENCY FLEET CORPORATION

DIRECTORS AND GENERAL OFFICERS

President.—Edward N. Hurley.
Vice-president.—John A. Donald.
Treasurer.—Raymond B. Stevens.
Bainbridge Colby.
Charles R. Page.
Capt. E. P. Bertholf.
Charles Piez.
Secretary.—Lester Sisler.

ADMINISTRATIVE OFFICERS

Vice-president and general manager.—Charles Piez.
Office manager.—George E. Oller.
Chief clerk.—Laurence Leonard.
Managers of divisions.—
Steel-ship construction.—F. T. Bowles.
Wood-ship construction.—James O. Heyworth.
Shipyard plants.—Rear Admiral H. H. Rousseau, U. S. N.
Contracts.—George S. Radford.
Transportation.—F. C. Joubert.
General purchasing officer.—F. A. Browne.
General auditor.—D. H. Bender.
General counsel.—John Barton Payne.

DIRECTOR GENERAL OF RAILROADS

Director General.—William G. McAdoo. (Private secretary, Oscar A. Price.)

MEMBERS OF ADVISORY BOARD

John Skelton Williams.
Hale Holden.
Henry Walters.
Edward Chambers.
Walter D. Hines (ex officio).

COUNCIL OF NATIONAL DEFENSE

THE COUNCIL

Chairman.—The Secretary of War.
The Secretary of the Navy.
The Secretary of the Interior.
The Secretary of Agriculture.
The Secretary of Commerce.
The Secretary of Labor.

THE ADVISORY COMMISSION

Chairman.—
Bernard M. Baruch, Howard E. Coffin, Hollis Godfrey, Samuel Gompers, Dr. Franklin H. Martin, Julius Rosenwald.
Director of the council and of the advisory commission.—Walter S. Gifford.
Secretary of the council and of the advisory commission.—Grosvenor B. Clarkson.
Chief clerk and disbursing officer.—E. K. Ellsworth.

WAR TRADE BOARD

Chairman.—Vance C. McCormick, representative of the Secretary of State.
Albert Strauss, representative of the Secretary of the Treasury.
Alonzo E. Taylor, representative of the Secretary of Agriculture.
Thomas D. Jones, representative of the Secretary of Commerce.
Clarence M. Woolley, representative of the Secretary of Commerce.
John Beaver White, representative of the Administrator.
Frank C. Munson, representative of the United States Shipping Board.
Counselor.—Thomas L. Chadbourne, Jr.
Secretary.—Lawrence Bennett.

BUREAUS OF THE WAR TRADE BOARD

Bureau of exports.—C. A. Richards, director.
Bureau of imports.—F. B. Petersen, director; P. Chauncey Anderson, counsel.
Bureau of war trade intelligence.—Paul Fuller, Jr., director.
Bureau of transportation.—L. L. Richards, director.
Bureau of administration.—Harry A. Engman, Jr., director.
Bureau of research.—Allyn A. Young, director.
Bureau of tabulation and statistics.—Lowell J. Reed, director.
Bureau of foreign agents and reports.—Charles Denby, director.
Bureau of enemy trade.—J. H. Hammond, director.

UNITED STATES FOOD ADMINISTRATION

Food Administrator.—Herbert Hoover.
Chief clerk.—Clinton R. Whitney.

UNITED STATES FUEL ADMINISTRATION

Fuel Administrator.—Harry A. Garfield.
Secretary to Fuel Administrator.—Van. H. Manning, Jr.

PRIORITY IN TRANSPORTATION

Commissioner.—Robert S. Lovett.
Assistant.—G. W. Kirtley.
Secretary.—Ralph B. Feagin.

ALIEN PROPERTY CUSTODIAN

Alien Property Custodian.—A. Mitchell Palmer.
Managing director.—J. Lionberger Davis.

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HERBERT C. HOOVER
Food Administrator

© Paul Thompson

DR. HARRY A. GARFIELD
Fuel Administrator

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W. S. GIFFORD
Director, Council of National Defence

From Paul Thompson

DANIEL WILLIARD
Chairman, War Industries Board

FOUR CIVILIAN HEADS OF IMPORTANT GOVERNMENT BUREAUS

Director bureau of administration.—Norman B. Dreher.
Director bureau of trusts.—Ralph Stone.
Director bureau of investigation.—Francis P. Garvan.
General counsel.—Moritz Rosenthal.

THE AIRCRAFT BOARD

Chairman.—Howard E. Coffin.
Vice-chairman.—Richard F. Howe.
Maj. Gen. George O. Squier, Chief Signal Officer of the Army.
Rear Admiral D. W. Taylor, Chief Constructor Navy.
Cols. E. A. Deeds and R. L. Montgomery, Signal Corps, Army.
Capt. N. E. Irwin, U. S. N.
Lieut. Commander A. K. Atkins, U. S. N.

COMMITTEE ON PUBLIC INFORMATION

The Secretary of State.
The Secretary of War.
The Secretary of the Navy.
George Creel, chairman.
Edgar Sisson, associate chairman.
Maurice F. Lyons, secretary.

For information on war finance, liberty loans, statistics of production, stock market, new industries, and trade control, see FINANCIAL REVIEW.

UNITED STATES AND THE WAR. PEACE PROPOSALS. In the first days of 1917 the chief aspect of the war, as regards the people of the United States, was the possibility of an early peace. On December 18, 1916, President Wilson had transmitted to the diplomatic representatives in the warring countries, as well as to neutral nations, a communication in which he suggested that the time had now come for declaring "the precise objects which would, if attained, satisfy them and their people that the war had been fought out" (see preceding YEAR BOOK, article on WAR OF THE NATIONS). Up to the end of the year Germany was the only country at war which had replied to the president's note. This answer was brief and evasive. The Allied Powers, on December 30, 1916, replied through president Wilson to the original German peace proposal. This reply was in effect a summing up of the cause of the Allies, with an assertion that peace could not be secured without reparation, restitution, and the assurance of the impossibility of future wars on the part of Germany.

The United States Senate, on January 5, by a vote of 48 to 17, passed the resolution, introduced by Senator Hitchcock, approving in the following terms the president's action in sending the diplomatic note of December 18: "Resolved, that the Senate approves and strongly endorses the request of the president in the diplomatic note of December 18, to the nations now engaged in the war, that these nations state the terms upon which peace might be discussed." During the discussion of the resolution, Senators Lodge of Massachusetts and Borah of Idaho attacked the diplomatic policy of the administration. In the final vote on the resolution, ten Republicans voted with the Democrats in its favor. On January 10, the Entente governments replied to President Wilson's note of December 18. A discussion of this reply will be found in the article WAR OF THE NATIONS in the section dealing with diplomatic negotiations relating to the war. On January 17, the State Department received from the British foreign office an additional note, supplementing the general reply of the Allies, and elaborating in detail the position of Great Britain.

The surprise which was occasioned by the president's note of December 18, both in the United States and Europe, was far surpassed by the general astonishment which followed the delivery of an address before the Senate on January 22. This remarkable address declared in effect that, while the United States would gladly join in the international movement to secure the future peace of the world, the basis of peace must be just and lasting, and such that the United States would approve. For a summary of the note see WAR OF THE NATIONS, *The Diplomacy of the War*, Peace Proposals.

The address was warmly praised and sharply criticized. Pacifists of all parties welcomed it as the most important step yet taken toward the end of the war. Opponents of the administration, both in Congress and the country at large, regarded the speech as untimely and dangerous. Criticism in the United States centred on the apparent abandonment of the tradition of diplomatic isolation which was implied in the president's address.

A discussion of the impressions made by the president's suggestions in Europe will be found in the article WAR OF THE NATIONS.

WAR ZONE DECREE. Discussion of the president's appeals for peace and the practical application of his theories were sharply put to an end on January 31, when Count von Bernstorff, the German Ambassador, delivered an announcement to the State Department, that, since Germany's proffer of peace negotiations had been refused by the Allied governments, the German government "is now compelled to continue the fight for existence, again forced upon it, with the full employment of all the weapons which are at its disposal."

This note was accompanied by a memorandum giving the conditions under which regular passenger steamers might continue undisturbed. Consult WAR OF THE NATIONS, *The Diplomacy of the War*, The United States Enters the War.

Count von Bernstorff also delivered a second memorandum, outlining the reasons for Germany's action. This memorandum was as follows:

> "After bluntly refusing Germany's peace offer, the Entente Powers stated in their note addressed to the American government, that they are determined to continue the war in order to deprive Germany of German provinces in the west and east, to destroy Austria-Hungary, and to annihilate Turkey. In waging war with such aims the Entente Allies are violating all rules of international law, as they prevent the legitimate trade of neutrals with the Central Powers, and of the neutrals themselves.
>
> "Germany has, so far, not made unrestricted use of the weapon which she possesses in her submarines. Since the Entente Powers, however, have made it impossible to come to an understanding based upon equality of rights of all nations, as proposed by the Central Powers, and have instead declared only such a peace to be possible which shall be dictated by the Entente Allies and shall result in the destruction and the humiliation of the Central Powers, Germany is unable further to forego the full use of her submarines.
>
> "The Imperial government, therefore, does not doubt that the government of the United States will understand the situation thus forced upon Germany by the Entente Allies' brutal methods of war and by their determination to destroy the Central Powers, and that the government of the United States will further realize that the now openly disclosed intention of the Entente Allies gives back to Germany the freedom of action which she reserved in her note addressed to the government of the United States on May 4, 1916."

The note of May 4 referred to in this memorandum contained a promise on the part of the German government not to sink merchant vessels without warning and without saving human lives unless the ship should attempt to escape or offer resistance. There had been coupled with this declaration a condition that its fulfillment depended upon efforts made on the part of the United States to obtain concessions from Great Britain to modify its war zone policy. In its reply to the German note of May 4, the American government had refused to accept these conditions, or to make its negotiations with Germany in any way dependent upon its negotiations with Great Britain.

In his note of January 31, 1916, Count von Bernstorff added further, that under the circumstances, Germany would meet the illegal measures of her enemies by forcibly preventing all navigation, even that of neutrals, within the specified zone. He added in conclusion: "All ships met within that zone will be sunk. The Imperial government is confident that this measure will result in a speedy termination of the war and in the restoration of peace, which the government of the United States has so much at heart."

Diplomatic Relations Severed. The president did not delay in this crisis. On February 3 Count von Bernstorff and his official staff were given their passports. On the afternoon of the same day, the president addressed a joint session of Congress. At this historic session, the galleries of the House were crowded with spectators and the president was interrupted several times during the delivery of this address, by hearty applause. The text of the address follows:

Gentlemen of the Congress:

The Imperial German government, on the 31st of January, announced to this government and to the governments of the other neutral nations that on and after the first day of February, the present month, it would adopt a policy with regard to the use of submarines against all shipping seeking to pass through certain designated areas of the high seas to which it is clearly my duty to call your attention.

Let me remind the Congress that on the 18th of April last, in view of the sinking on the 24th of March of the cross-channel passenger steamer *Sussex* by a German submarine, without summons or warning, and the consequent loss of the lives of several citizens of the United States who were passengers aboard her, this government addressed a note to the Imperial German government in which it made the following declaration:

"If it is still the purpose of the Imperial German government to prosecute relentless and indiscriminate warfare against vessels of commerce by the use of submarines without regard to what the government of the United States must consider the sacred and indisputable rules of international law, and the universally recognized dictates of humanity, the government of the United States is at last forced to the conclusion that there is but one course it can pursue. Unless the German government should now immediately declare and effect an abandonment of its present methods of submarine warfare against passenger and freight carrying vessels the government of the United States can have no choice but to sever diplomatic relations with the German Empire altogether."

In reply to this declaration the German government gave this government the following assurances:

"The German government is prepared to do its utmost to confine the operations of war for the rest of its duration to the fighting forces of the belligerents, thereby insuring the freedom of the seas, a principle upon which the German government believes, now as before, to be in agreement with the government of the United States.

"The German government, guided by this idea, notifies the government of the United States that the German naval forces have received the following orders:

"In accordance with the general principles of visit and search and destruction of merchant vessels recognized by international law, such vessels, both within and without the area declared as naval war zone, shall not be sunk without warning and without saving human lives, unless these ships attempt to escape or offer resistance.

"But neutrals can not expect that Germany, forced to fight for her existence, shall, for the sake of neutral interest, restrict the use of an effective weapon if her enemy is permitted to continue to apply at will methods of warfare violating the rules of international law. Such a demand would be incompatible with the character of neutrality, and the German government is convinced that the government of the United States does not think of making such a demand, knowing that the government of the United States has repeatedly declared that it is determined to restore the principle of the freedom of the seas from whatever quarter it has been violated."

To this the government of the United States replied on the 8th of May, accepting, of course, the assurances given, but adding:

"The government of the United States feels it necessary to state that it takes it for granted that the Imperial German government does not intend to imply that the maintenance of its newly announced policy is in any way contingent upon the course or result of diplomatic negotiations between the government of the United States and any other belligerent government, notwithstanding the fact that certain passages in the imperial government's note of the 4th instant might appear to be susceptible to that construction. In order, however, to avoid any possible misunderstanding, the government of the United States notifies the imperial government that it cannot for a moment entertain, much less discuss, a suggestion that respect by German naval authorities for the rights of citizens of the United States upon the high seas should in any way or in the slightest degree be made contingent upon the conduct of any other government affecting the rights of neutrals and non-combatants. Responsibility in such matters is single, not joint; absolute, not relative."

To this note of the 8th of May the imperial German government made no reply.

On the 31st of January, the Wednesday of the present week, the German Ambassador handed to the secretary of state, along with a formal note, a memorandum which contains the following statement:

"The imperial government, therefore, does not doubt that the government of the United States will understand the situation thus forced upon Germany by the Entente Allies' brutal methods of war and by their determination to destroy the Central Powers, and that the government of the United States will further realize that the now openly disclosed intentions of the Entente Allies give back to Germany the freedom of action which she reserved in her note addressed to the government of the United States on May 4, 1916.

"Under these circumstances Germany will meet the illegal measures of her enemies by forcibly preventing after February 1, 1917, in a zone around Great Britain, France, Italy, and in the eastern Mediterranean all navigation, that of neutrals included, from and to France, etc. All ships met within the zone will be sunk."

I think that you will agree with me that, in view of this declaration, which suddenly and without prior intimation of any kind deliberately withdraws the solemn assurance given in the imperial government's note of the fourth of May, 1916, this government has no alternative consistent with the dignity and honor of the United States but to take the course which, in its note of the 18th of April, 1916, it announced that it would take in the event that the German government did not declare and effect an abandonment of the methods of submarine warfare which it was then employing and to which it now purposes again to resort.

I have, therefore, directed the secretary of state to announce to his excellency the German Ambassador that all diplomatic relations between the United States and the German Empire are severed, and t the American Ambassador at Berlin will immediately be withdrawn, and, in accordance with this decision, to hand to his excellency his passports.

Notwithstanding this unexpected action of the German government, this sudden and deeply deplorable renunciation of its assurances, given this government at one of the most critical moments of tension in the relation of the two governments, I refuse to believe that it is the intention of the

> German authorities to do in fact what they have warned us they will feel at liberty to do. I cannot bring myself to believe that they will indeed pay no regard to the ancient friendship between their people and our own or to the solemn obligations which have been exchanged between them and destroy American ships and take the lives of American citizens in the willful prosecution of the ruthless naval programme they have announced their intention to adopt.
>
> Only actual overt acts on their part can make me believe it even now.
>
> If this inveterate confidence on my part in the sobriety and prudent foresight of their purpose should unhappily prove unfounded, if American ships and American lives should in fact be sacrificed by their naval commanders in heedless contravention of the just and reasonable understandings of international law and the obvious dictates of humanity, I shall take the liberty of coming again before the Congress to ask that authority be given me to use any means that may be necessary for the protection of our seamen and our people in the prosecution of their peaceful and legitimate errands on the high seas. I can do nothing less. I take it for granted that all neutral governments will take the same course.
>
> I do not desire any hostile conflict with the Imperial German government. We are the sincere friends of the German people and earnestly desire to remain at peace with the government which speaks for them. We shall not believe that they are hostile to us until we are obliged to believe it; and we purpose nothing more than the reasonable defense of the undoubted rights of our people. We wish to serve no selfish ends. We seek merely to stand true alike in thought and in action to the immemorial principles of our people which I sought to express in my address to the Senate only two weeks ago—seek merely to vindicate our right to liberty and justice and an unmolested life. These are bases of peace, not war. God grant we may not be challenged to defend them by acts of willful injustice on the part of the government of Germany!

THE COUNTRY AROUSED. The president's action was universally and enthusiastically commended. To a large portion of the people there came with it a sense of relief at the termination of the intolerable situation, resulting from the efforts of the country to maintain a position of neutrality in the face of continued outbreaks on the part of Germany, and an almost general sympathy with the cause of the Allies. The governors of many States at once sent messages to the president assuring him that he would receive their hearty and undivided support. The president's stand was approved by his predecessor, Mr. Taft, and his recent rival for the presidency, Mr. Hughes.

Colonel Roosevelt at once volunteered to raise a division of troops, if war should be declared, and announced his intention of going to the front with his four sons. William J. Bryan was the only prominent opponent of the policy of maintaining American rights at sea if necessary by war. He suggested a postponement of the question until after the end of the war. He also declared that Americans should be forbidden to travel on belligerent ships, and that American ships should be forbidden to enter the war zone. He favored the submission of the question of war or peace to a popular referendum.

In Congress the support of the president was practically unanimous. Attention was at once given to the consideration of measures already introduced imposing heavy penalties on persons guilty of offenses against the neutrality of the United States.

In the harbors of the country, especially in New York and Boston, there had been interned, since the outbreak of the war, a large number of German merchant ships, including several of the largest vessels in commission. Possession was at once taken of these vessels by the American authorities not, however, in many cases, before they had been seriously damaged by their former crews under orders from the German government (see below).

The government authorities took charge of the wireless station at Sayville, Long Island, which, during the war, had been the most important means of rapid communication between Germany and the United States. All diplomatic representatives from Germany, including consuls and consul's agents, were directed to return home at once.

Measures were at once taken by all the government agencies to prepare for the war which seemed now inevitable. The Council of National Defense took up plans for the mobilization of the industrial resources of the country, and to consider the offers of many manufacturers who had placed their plants at the disposal of the government. The Naval Consulting Board, under the presidency of Thomas A. Edison, began the consideration of new methods of dealing with submarines. Efforts to enlist 25,000 recruits for the navy were at once begun. The president and his cabinet began the preparation of measures to be introduced into Congress to meet the emergency.

The State Department forwarded to the American representatives in neutral countries the announcement of the severance of diplomatic relations with Germany, adding these instructions: "Say also that the president is reluctant to believe that Germany actually will carry out her threats against neutral commerce, but, if it be done, the president will ask Congress to authorize the use of the national power to protect American citizens engaged in their peaceful and lawful errands on the sea. He believes it will make for the peace of the world if other neutral powers may find it possible to take similar action."

The Senate, on February 7, passed a resolution, by a vote of 78 to 5, approving "the action taken by the president as set forth in his address delivered before the joint session of Congress." See UNITED STATES.

On the same day in which this resolution was passed the first passenger steamer, since the promulgation of the German edict, fell a victim to the German blockade about the British Islands. This was the steamer *California*, of the Anchor Line, on her way from New York to Glasgow. She was hit by a torpedo and from the explosion which followed five persons were killed, thirty-six others were drowned, including three women and two children.

GERMAN-AMERICAN ATTITUDE. The attitude of the German-Americans in this crisis had been awaited with some anxiety. As a class these men were emphatic in expressing their determination to uphold the hands of the American government. The German-American National Alliance at a meeting of delegates from twenty-eight States held in Philadelphia, adopted resolutions, pledging loyalty to the government in peace and war. There was also a rush of applicants for naturalization on the part of these residents. Certain conspicuous members of the German-American Alliance, however, identified themselves with the pacifists, and favored submitting the question of war to a national referendum.

Samuel Gompers, president of the American Federation of Labor, promised that the members and officials of the federation would be united in the support of the government. Woman suffrage organizations also offered their services in any fields where they might be found useful. In the colleges and universities throughout the country the training of students for the various branches of the military and naval service was at once begun.

A Period of Waiting. The tension which followed the severance of diplomatic relations increased as the days went on. On the same day on which diplomatic relations were severed, the American steamship *Housatonic* was sunk by a German submarine, after warning had been given. All on board were saved. Following the destruction of the *California*, came the loss of two British steamers, the *Japanese Prince* and the *Montola*, which were sunk without warning by a German submarine. On board the *Japanese Prince* were thirty American cattlemen who were all saved. On board the *Montola* was an American doctor. The *Lyman M. Law*, an American sailing vessel loaded with lumber, on her way from Maine to Italy, was sunk by a submarine off the coast of Sardinia. Seven of the crew were Americans. The attack was made without warning, and, after the crew had left, a bomb was placed on board and the ship was destroyed. Much more serious was the destruction, on February 25, of the Cunard liner *Laconia*, which was torpedoed in the Irish Sea at night. Three American passengers, two of whom were women, died from exposure in an open boat while the survivors were making their way toward shore. While public feeling grew more intense day by day, the president remained silent. Germany, in the meantime, made tentative proposals through the Swiss minister to reopen negotiations with the American government. An account of these efforts will be found in War of the Nations, *Diplomacy of the War*. It may be noted here, however, that these overtures were bluntly refused by the secretary of state.

As we have already noted, upon the rupture of diplomatic relations, the State Department notified Ambassador Gerard in Berlin to ask for his passports. At this time Mr. Gerard was occupied in negotiating with the German government for the release of sixty-two American prisoners taken from ships sunk by a German raider in the South Atlantic, and taken to a German port on one of the captured vessels, the British steamer *Yarrowdale*. As these men were neutrals Germany had no right to hold them. The German government, however, undertook to take advantage of the situation to obtain concessions from the American government. Ambassador Gerard, in the days immediately following the severance of relations, was subjected to many indignities by the German authorities. His mail was intercepted, his telephone cut off, and telegraphic facilities denied him. Efforts were made also to force him to sign a protocol revising the treaties of 1799 and 1828 with the effect of protecting Germans and their interests in the United States in the event of war. See War of the Nations, section on *The Diplomacy of the War*.

Mr. Gerard was finally permitted to leave Berlin on February 10. American affairs in Germany were placed in the hands of the Spanish Ambassador. On February 14 Count von Bernstorff sailed for Germany on a Danish steamer, guarantees having been obtained from the Allied countries that he would have safe conduct.

The *Yarrowdale* prisoners, after various delays, were finally released on March 8, 1917. The reason for their detention, as given by the German officials, was the desire to ascertain the attitude to be taken toward German subjects in the United States.

Armed Neutrality. The president broke silence on February 26, by appearing again before Congress in joint session, and asking for authority to use the armed forces of the United States to protect American rights on the seas. Effect was added to his appeal by the fact that news was received, while the president was on his way to the capitol, of the destruction of the *Laconia*, mentioned above. The text of the president's message is as follows:

> Gentlemen of the Congress: I have again asked the privilege of addressing you because we are moving through critical times during which it seems to me to be my duty to keep in close touch with the houses of Congress, so that neither counsel nor action shall run at cross purposes between us.
>
> On the 3d of February I officially informed you of the sudden and unexpected action of the Imperial German government in declaring its intention to disregard the promises it had made to this government in April last and undertake immediate submarine operations against all commerce, whether of belligerents or of neutrals, that should seek to approach Great Britain and Ireland, the Atlantic coasts of Europe, or the harbors of the eastern Mediterranean, and to conduct these operations without regard to the established restrictions of international practice, without regard to any considerations of humanity, even, which might interfere with their object. That policy was forthwith put into practice. It has now been in active execution for nearly four weeks.
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> Its practical results are not yet fully disclosed. The commerce of other neutral nations is suffering severely, but not, perhaps, very much more severely than it was already suffering before the 1st of February, when the new policy of the Imperial government was put into operation. We have asked the coöperation of the other neutral governments to prevent these depredations, but so far none of them has thought it wise to join us in any common course of action. Our own commerce has suffered is suffering, rather in apprehension than in fact, rather because so many of our ships are timidly keeping to their home ports than because American ships have been sunk.
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> Two American vessels have been sunk, the *Housatonic* and the *Lyman M. Law*. The case of the *Housatonic*, which was carrying foodstuffs consigned to a London firm, was essentially like the case of the *Frye*, in which, it will be recalled, the German government admitted its liability for damages, and the lives of the crew, as in the case of the *Frye*, were safeguarded with reasonable care. The case of the *Law*, which was carrying lemon box staves to Palermo, disclosed a ruthlessness of method which deserves grave condemnation, but was accompanied by no circumstances which might not have been expected at any time in connection with the use of the submarine against merchantmen as the German government has used it.
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> In sum, therefore, the situation we find ourselves in with regard to the actual conduct of the German submarine warfare against commerce and its effects upon our own ships and people is substantially the same that it was when I addressed you on the 3d of February, except for the tying up of our shipping in our own ports because of the unwillingness of our shipowners to risk their vessels at sea without insurance or adequate protection, and the very serious congestion of our commerce which has resulted, a congestion which is growing rapidly more and more serious every day. This in itself might presently accomplish, in effect, what the new German submarine orders were meant to accomplish, so far as we are concerned.
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> We can only say, therefore, that the overt act which I have ventured to hope the German commanders would in fact avoid has not occurred.

But while this is happily true, it must be admitted that there have been certain additional indications and expressions of purpose on the part of the German press and the German authorities which have increased rather than lessened the impression that, if our ships and our people are spared, it will be because of fortunate circumstances or because the commanders of the German submarines which they may happen to encounter exercise an unexpected discretion and restraint rather than because of the instructions under which those commanders are acting. It would be foolish to deny that the situation is fraught with the gravest possibilities and dangers. No thoughtful man can fail to see that the necessity for definite action may come at any time, if we are in fact and not in word merely to defend our elementary rights as a neutral nation. It would be most imprudent to be unprepared.

I cannot in such circumstances be unmindful of the fact that the expiration of the term of the present Congress is immediately at hand, by constitutional limitation; and that it would in all likelihood require an unusual length of time to assemble and organize the Congress which is to succeed it. I feel that I ought, in view of the fact, to obtain from you full and immediate assurance of the authority which I may need at any moment to exercise. No doubt I already possess that authority without special warrant of law, by the plain implication of my constitutional duties and powers; but I prefer, in the present circumstances, not to act upon general implication. I wish to feel that the authority and the power of the Congress are behind me in whatever it may become necessary for me to do. We are jointly the servants of the people and must act together and in their spirit, so far as we can divine and interpret it.

No one doubts what it is our duty to do. We must defend our commerce and the lives of our people in the midst of the present trying circumstances, with discretion but with clear and steadfast purpose. Only the method and the extent remain to be chosen, upon the occasion, if occasion should indeed arise. Since it has unhappily proved impossible to safeguard our neutral right by diplomatic means against the unwarranted infringements they are suffering at the hands of Germany, there may be no recourse but to armed neutrality, which we shall know how to maintain and for which there is abundant American precedent.

It is devoutly to be hoped that it will not be necessary to put armed force anywhere into action. The American people do not desire it and our desire is not different from theirs. I am sure that they will understand the spirit in which I am now acting, the purpose I hold nearest my heart, and would wish to exhibit in everything I do. I am anxious that the people of the nations at war also should understand and not mistrust us. I hope that I need give no further proofs and assurances that I have already given throughout nearly three years of anxious patience that I am the friend of peace and mean to preserve it for America so long as I am able.

I am not now proposing or contemplating war or any steps that need lead to it. I merely request that you will accord me by your own vote and definite bestowal the means and the authority to safeguard in practice the right of a great people who are at peace and who are desirous of exercising none but the rights of peace to follow the pursuits of peace in quietness and good will—rights recognized time out of mind by all the civilized nations of the world. No course of my choosing or of theirs will lead to war. War can come only by the willful acts and aggressions of others.

You will understand why I can make no definite proposals or forecasts of action now, and must ask for your supporting authority in the most general terms. The form in which action may become necessary cannot yet be foreseen. I believe that the people will be willing to trust me to act with restaint, with prudence, and in the true spirit of amity and good faith that they have themselves displayed throughout these trying months, and it is in that belief that I request that you will authorize me to supply our merchant ships with defensive arms should that become necessary, and with the means of using them, and to employ any other instrumentalities or methods that may be necessary and adequate to protect our ships and our people in their legitimate and peaceful pursuits on the seas.

I request also that you will grant me, at the same time, along with the powers I ask, a sufficient credit to enable me to provide adequate means of protection where they are lacking, including adequate insurance against the present war risks.

I have spoken of our commerce and of the legitimate errands of our people on the seas, but you will not be misled as to my main thought, the thought that lies beneath these phrases and gives them dignity and weight. It is not of material interest merely that we are thinking. It is, rather, of fundamental human rights, chief of all the right of life itself. I am thinking not only of the rights of Americans to go and come about their proper business by way of the sea, but also of something much deeper, much more fundamental than that. I am thinking of those rights of humanity without which there is no civilization.

My theme is of those great principles of compassion and of protection which mankind has sought to throw about human lives, the lives of non-combatants, the lives of men who are peacefully at work keeping the industrial processes of the world quick and vital, the lives of women and children and of those who supply the labor which ministers to their sustenance.

We are speaking of no selfish material rights, but of rights which our hearts support and whose foundation is that righteous passion for justice upon which all law, all structures alike of family, of state, and of mankind, must rest, as upon the ultimate base of our existence and our liberty. I cannot imagine any man with American principles at his heart hesitating to defend these things.

OPPOSITION IN CONGRESS. Immediately following the request of the president, the Senate and the House set about framing bills to put it into effect. Congress expired on March 4, 1917, and there remained only eight days in which to debate and agree to a measure which was certainly to be strongly opposed by the pacifist element in Congress. In the House, this opposition did not assume formidable proportion. The Armed Ship Bill was reported in that body by the Foreign Affairs Committee. On February 28 and 29 debate was carried on. The bill was passed before adjournment by a vote of 403 to 13. It was at once sent to the Senate, and was substituted for the bill prepared by the Senate Committee on Foreign Affairs whose provisions conferred larger powers upon the president. Debate on the bill began in the Senate on March 1.

Senator La Follette, of Wisconsin, objected to its consideration, and would permit the debate to be carried on, only on condition that no attempt would be made to pass the bill before the next day. Thus a day was lost, and this sealed the fate of the measure. It was debated continuously on March 2, 1917, and debate was resumed on the following day. Senator Stone, chairman of the Committee on Foreign Relations, was opposed to the bill, and he proposed an amendment excluding munition ships from armed protection. The chief obstruction to the bill, however, came from a group of Senators representing chiefly western States who prevented every effort made for limiting debate or setting a time for voting. When the supporters of the bill understood that there was no possibility of its passage, they signed a manifesto reading as follows: "The undersigned United States Senators favor the passage of Senate bill 8322, to authorize the President of the United States to arm American merchant vessels. A similar bill already has passed the House by a vote of 403 to 13. Under the rules of the Senate, allowing unlimited debate, it now appears to be impossible to obtain a vote prior to noon, March 4, 1917, when the session of the Congress expires. We desire the statement entered in the record to establish the fact that the Senate favors the legislation and would pass if a vote could be obtained." This manifesto was signed by seventy-five Senators. The Senate continued in session until twelve o'clock noon on March 4, 1917, when it automatically adjourned, the session having expired. The twelve Senators who prevented the passage of the bill were La Follette of Wisconsin, Norris of Nebraska, Cummins of Iowa, Kenyon of Iowa, Stone of Missouri, Gronna of North Dakota, Kirby of Arkansas, Vardaman of Mississippi, O'Gorman of New York, Works of California, Clapp of Minnesota, and Lane of Oregon; seven Republicans and five Democrats.

The situation brought from the president the indignant protest in the form of a public statement in which he denounced the actions of the twelve Senators, and called for a revision of the rules of the Senate, which would prevent a repetition of the performance.

GERMANY AND MEXCO. While the discussion of this bill was being carried on in Congress, the nation was suddenly startled by the publication of a note from the German foreign minister to the German ambassador in Mexico. This document, which was dated January 19, 1917, announced to the latter official that submarine warfare would be resumed and directed him to propose to the Mexican government an alliance with Germany against the United States. For discussion of this episode see the article WAR OF THE NATIONS, *The Diplomacy of the War.*

ARMING OF MERCHANT SHIPS. Although the president's efforts to receive authority from Congress for arming merchant ships failed, he was able to accomplish his purposes in another way. An act passed in 1819 governing piracy at sea was held by the advisers of the president to give the required authority. This statute forbade American merchant men to defend themselves against commissioned vessels of a nation with which the United States was at "amity"; but they could resist by force any attacks made on them by other armed vessels. In other words, this legalized resistance to pirates. It was held that Germany's denial to Americans of the rights of the high seas was inconsistent with true amity, and caused her war vessels to lose, so far as the United States was concerned, their right to immunity from attack, both under international law and under the law of 1819. The president, as commander-in-chief of the army and navy, thereupon determined to order the armament of merchant vessels in so far as they desired to be armed. The following memorandum was thereupon dispatched to the foreign governments:

> "In view of the announcement of the Imperial German government on January 31, 1917, that all ships, those of neutrals included, met within certain zones of the high seas, would be sunk without any precaution taken for the safety of the persons on board, and without the exercise of visit and search, the government of the United States has determined to place upon all American merchant vessels sailing through the barred areas an armed guard for the protection of the vessels and the lives of the persons on board."

In the meantime, the Senate of the Sixty-fourth Congress remained in executive session in order to devise a means of preventing a repetition of the situation which had prevented the passage of the Armed Merchant Bill. See UNITED STATES, *Sixty-Fifth Congress, Special Session.*

The president was inaugurated for his second term on March 4, 1917. His inaugural address was given up mainly to the consideration of the situation as relates to Germany.

President Wilson, on March 9, issued a call for a session of the Sixty-fifth Congress to assemble on April 16 for the purpose of passing appropriation measures and other bills necessary to prepare for the inevitable event.

German submarines continued to fire upon and sink American vessels and vessels which had Americans aboard. On March 12, 1917, the unarmed steamer *Algonquin,* with a crew of 27 men, of whom 10 were Americans, was sunk without warning by a German submarine. Two days later three unarmed vessels, the *City of Memphis, Illinois,* and *Vigilencia,* were destroyed.

It was obvious that a state of armed neutrality was inadequate to meet the serious situation. The president was confronted with the necessity of immediately taking more drastic action rather than continuing to pursue measures of passive defense. At a Cabinet meeting on March 20 further action was discussed, and on the following day the president issued a proclamation calling upon Congress to assemble on April 2 instead of April 16 "to receive a communication concerning grave matters of national policy."

In the meantime, preparations were steadily going forward. The Secretary of War made a contract with manufacturers for military supplies even although such expenditures had not been authorized by Congress. On March 25 the president called for the Federal service of fourteen National Guard regiments from the eastern States. Several of these States had already put their militia on a war footing. The purpose of this mobilization was to protect munition plants, bridges, railways, and other endangered property from any violations that might arise from the present international crisis. There were also organized two new departments of the regular army, the northeastern, comprising the New England States, and the southeastern, including the southern States east of the Mississippi.

Each day the government received more emphatic assurance of support from State legislatures, governors, and members of Congress. At a rally in Madison Square in New York City, resolutions were adopted urging an immediate declaration of war and the enactment of universal military service. Elihu Root was the principal speaker.

There were many proofs of the activities of German agents, especially in an effort to use the territory of the United States as a basis for conspirators against the Allies. In Hoboken, N. J., two Germans, Fritz Kolb and Hans Schwartz, were arrested for storing powerful explosives with the apparent intention of wrecking munition plants. In Galveston, Texas, bombs were discovered on board a grain ship and in a grain elevator. There was discovered in Philadelphia a plot in which the president of the Machine Manufacturing Company, which had performed contracts for the American navy, had conspired with the captains of interned commerce raiders in the port, to obtain and transmit to Germany secret information in regard to the American navy. See also section on *German Intrigues.*

DECLARATION OF WAR. On the appointed date, April 2, 1917, President Wilson appeared before the joint session of Congress, at 8:35 in the evening, and asked for authority to declare war against Germany. This historic address follows:

I have called the Congress into extraordinary session because there are serious—very serious—choices of policy to be made, and made immediately, which it was neither right nor constitutionally permissible that I should assume the responsibility of making.

On the third of February last I officially laid before you the extraordinary announcement of the Imperial German government that on and after the first day of February it was its purpose to put aside all restraints of law or of humanity and use its submarines to sink every vessel that sought to approach either the ports of Great Britain and Ireland or the western coasts of Europe, or any of the ports controlled by the enemies of Germany within the Mediterranean.

That had seemed to be the object of the German submarine warfare earlier in the war, but since April of last year the Imperial German government had somewhat restrained the commanders of its under sea craft in conformity with its promise then given to us that passenger boats should not be sunk and that due warning would be given to all other vessels which its submarines might seek to destroy, when no resistance was offered or escape attempted, and care taken that their crews were given at least a fair chance to save their lives in their open boats.

The precautions taken were meagre and haphazard enough, as was proved in distressing instance after instance in the progress of the cruel and unmanly business, but a certain degree of restraint was observed.

The new policy has swept every restriction aside. Vessels of every kind, whatever their flag, their character, their cargo, their destination, their errand, have been ruthlessly sent to the bottom without warning and without thought of help or mercy for those on board, the vessels of friendly neutrals along with those of belligerents.

Even hospital ships and ships carrying relief to the sorely bereaved and stricken people of Belgium, though the latter were provided with safe conduct through the proscribed areas by the German government itself and were distinguished by unmistakable marks of identity, have been sunk with the same reckless lack of compassion or of principle.

International law had its origin in the attempt to set up some law, which would be respected and observed upon the seas, where no nation had right of dominion and where lay the free highways of the world.

By painful stage after stage has that law been built up, with meagre enough results, indeed, after all was accomplished that could be accomplished, but always with a clear view, at least, of what the heart and conscience of mankind demanded.

This minimum of right the German government has swept aside under the plea of retaliation and necessity, and because it had no weapons which it could use at sea except these, which it is impossible to employ, as it is employing them, without throwing to the winds all scruples of humanity or of respect for the understandings that were supposed to underlie the intercourse of the world.

I am not now thinking of the loss of property involved, immense and serious as that is, but only of the wanton and wholesale destruction of the lives of non-combatants—men, women, and children—engaged in pursuits which have always, even in the darkest periods of modern history, been deemed innocent and legitimate. Property can be paid for; the lives of peaceful and innocent people cannot be.

The present German warfare against commerce is a warfare against mankind. It is a war against all nations. American ships have been sunk, American lives taken, in ways which it has stirred us very deeply to learn of; but the ships and people of other neutral and friendly nations have been sunk and overwhelmed in the waters in the same way.

There has been no discrimination. The challenge is to all mankind. Each nation must decide for itself how it will meet it. The choice we make for ourselves must be made with a moderation of counsel and a temperateness of judgment befitting our character and our motives as a nation. We must put excited feeling away. Our motive will not be revenge or the victorious assertion of the physical might of the nation, but only the vindication of right, of human right, of which we are only a single champion.

When I addressed the Congress on the twenty-sixth of February last I thought that it would suffice to assert our neutral rights with arms, our right to use the seas against unlawful interference, our right to keep our people safe against unlawful violence.

But armed neutrality, it now appears, is impracticable. Because submarines have been used against merchant shipping it is impossible to defend ships against their attacks, as the law of nations has assumed that merchantmen would defend themselves against privateers or cruisers, visible craft, giving chase upon the open sea.

It is common prudence in such circumstances, grim necessity indeed, to destroy them before they have shown their own intention. They must be dealt with upon sight, if dealt with at all.

The German government denies the right of neutrals to use arms at all within the areas of the sea which it has prohibited even in the defense of rights which no modern publicist has ever before questioned their right to defend.

The intimation is conveyed that the armed guards which we have placed on our merchant ships will be treated as beyond the pale of law and subject to be dealt with as pirates would be. Armed neutrality is ineffectual enough at best. In such circumstances and in the face of such pretensions it is worse than ineffectual. It is likely only to produce what it was meant to prevent. It is practically certain to draw us into the war without either the rights or the effectiveness of belligerents.

There is one choice we cannot make, we are incapable of making: We will not choose the path of submission and suffer the most sacred rights of our nation and our people to be ignored or violated. The wrongs against which we now array ourselves are not common wrongs; they cut to the very roots of human life.

With a profound sense of the solemn and even tragical character of the step I am taking and of the grave responsibilities which it involves, but in unhesitating obedience to what I deem my constitutional duty, I advise that the Congress declare the recent course of the Imperial German government to be in fact nothing less than war against the government and people of the United States; that it formally accept the status of belligerent which has thus been thrust upon it and that it take immediate steps not only to put the country in a more thorough state of defense, but also to exert all its power and employ all its resources to bring the government of the German Empire to terms and end the war.

What this will involve is clear. It will involve the utmost practicable coöperation in counsel and action with the governments now at war with Germany, and, as incident to that, the extension to those governments of the most liberal financial credits, in order that our resources may, so far as possible, be added to theirs. It will involve the organization and mobilization of all the material resources of the country to supply the materials of war and serve the incidental needs of the nation in the most abundant, and yet the most economical and efficient, way possible.

It will involve the immediate full equipment of the navy in all respects, but particularly in supplying it with the best means of dealing with the enemy's submarines. It will involve the immediate addition to the armed forces of the United States, already provided for by law in case of war, of at least 500,000 men, who should, in my opinion, be chosen upon the principle of universal liability to service, and also the authorization of subsequent additional increments of equal force so soon as they may be needed and can be handled in training.

It will involve also, of course, the granting of adequate credits to the government, sustained, I hope, so far as they can equitably be sustained by the present generation, by well conceived taxation. I say sustained so far as may be equitable by taxation because it seems to me that it would be most unwise to base the credits which will now be necessary entirely on money borrowed. It is our duty, I most respectfully urge, to protect our people so far as we may against the very serious hardships and evils which would be likely to arise out of the inflation which would be produced by vast loans.

In carrying out the measures by which these things are to be accomplished we should keep constantly in mind the wisdom of interfering as little as possible in our own preparation and in the equipment of our own military forces with the duty—for it will be a very practical duty—of supplying the nations already at war with Germany with the materials which they can obtain only from us or by our assistance. They are in the field and we should help them in every way to be effective there.

I shall take the liberty of suggesting, through the several executive departments of the government for the consideration of your committees, measures for the accomplishment of the several objects I have mentioned. I hope that it will be your pleasure to deal with them as having been framed after very careful thought by the branch of the government upon which the responsibility of conducting the war and safeguarding the nation will most directly fall.

While we do these things, these deeply momentous things, let us be very clear, and make very clear to all the world what our motives and our objects are. My own thought has not been driven from its habitual and normal course by the unhappy events of the last two months, and I do not believe that the thought of the nation has been altered or clouded by them.

I have exactly the same thing in mind now that I had in mind when I addressed the Senate on the 22d of January last; the same that I had in mind when I addressed the Congress on the 3d of February and on the 26th of February. Our object now, as then, is to vindicate the principles of peace and justice in the life of the world as against selfish and autocratic power and to set up amongst the really free and self-governed peoples of the world such a concert of purpose and of action as will henceforth insure the observance of those principles.

Neutrality is no longer feasible or desirable where the peace of the world is involved and the freedom of its peoples, and the menace to that peace and freedom lies in the existence of autocratic governments backed by organized force, which is controlled wholly by their will, not by the will of their people. We have seen the last of neutrality in such circumstances.

We are at the beginning of an age in which it will be insisted that the same standards of conduct and of responsibility for wrong done shall be observed among nations and their governments that are observed among the individual citizens of civilized states.

We have no quarrel with the German people. We have no feeling toward them but one of sympathy and friendship. It was not upon their impulse that their government acted in entering this war. It was not with their previous knowledge or approval.

It was a war determined upon as wars used to be determined upon in the old, unhappy days when peoples were nowhere consulted by their rulers and wars were provoked and waged in the interest of dynasties or of little groups of ambitious men who were accustomed to use their fellow men as pawns and tools.

Self-governed nations do not fill their neighbor states with spies or set the course of intrigue to bring about some critical posture of affairs which will give them an opportunity to strike and make conquest. Such designs can be successfully worked only under cover and where no one has the right to ask questions.

Cunningly contrived plans of deception or aggression, carried, it may be, from generation to generation, can be worked out and kept from the light only within the privacy of courts or behind the carefully guarded confidences of a narrow and privileged class. They are happily impossible where public opinion commands and insists upon full information concerning all the nation's affairs.

A steadfast concert for peace can never be maintained except by a partnership of democratic nations. No autocratic government could be trusted to keep faith within it or observe its covenants. It must be a league of honor, a partnership of opinion. Intrigue would eat its vitals away, the plottings of inner circles would be a corruption seated at its very heart. Only free peoples who could plan what they would and render account to no one can hold their purpose and their honor steady to a common end and prefer the interests of mankind to any narrow interest of their own.

Does not every American feel that assurance has been added to our hope for the future peace of the world by the wonderful and heartening things that have been happening within the last few weeks in Russia?

Russia was known by those who knew it best to have been always in fact democratic at heart, in all the vital habits of her thought, in all the intimate relationships of her people that spoke their natural instinct, their habitual attitude toward life.

Autocracy that crowned the summit of her political structure, long as it has stood and terrible as was the reality of its power, was not in fact Russian in origin, in character or purpose, and now it has been shaken and the great, generous Russian people have been added in all their native majesty and might to the forces that are fighting for freedom in the world, for justice, and for peace.

Here is a fit partner for a league of honor.

One of the things that has served to convince us that the Prussian autocracy was not and could never be our friend is that from the very outset of the present war it has filled our unsuspecting communities and even our offices of government with spies and set criminal intrigues everywhere afoot against our national unity of council, our peace within and without, our industries and our commerce.

Indeed it is now evident that its spies were here even before the war began, and it is unhappily not a matter of conjecture but a fact proved in our courts of justice that the intrigues which have more than once come perilously near to disturbing the peace and dislocating the industries of the country have been carried on at the instigation, with the support, and even under the personal direction of official agents of the Imperial government accredited to the government of the United States.

Even in checking these things and trying to extirpate them we have sought to put the most generous interpretation possible upon them because we knew that their source lay, not in any hostile feeling or purpose of the German people toward us (who were, no doubt, as ignorant of them as we ourselves were) but only in the selfish designs of a government that did what it pleased and told its people nothing. But they have played their part in serving to convince us at last that that government entertains no real friendship for us and means to act against our peace and security at its convenience. That it means to stir up enemies against us at our very doors the intercepted note to the German Minister at Mexico City is eloquent evidence.

We are accepting this challenge of hostile purpose because we know that in such a government, following such methods, we can never have a friend; and that in the presence of its organized power, always lying in wait to accomplish we know not what purpose, there can be no assured security for the democratic governments of the world.

We are now about to accept gauge of battle with this natural foe to liberty, and shall, if necessary, spend the whole force of the nation to check and nullify its pretensions and its power. We are glad, now that we see the facts with no veil of false pretense about them, to fight thus for the ultimate peace of the world and for the liberation of its peoples—the German people included—for the rights of nations great and small and the privilege of men everywhere to choose their way of life and of obedience.

The world must be made safe for democracy. Its peace must be planted upon the trusted foundations of political liberty.

We have no selfish ends to serve. We desire no conquest, no dominion. We seek no indemnities for ourselves, no material compensation for the sacrifices we shall freely make. We are but one of the champions of the rights of mankind. We shall be satisfied when those rights have been made as secure as the faith and the freedom of the nation can make them.

Just because we fight without rancour and without selfish objects, seeking nothing for ourselves but what we shall wish to share with all free peoples, we shall, I feel confident, conduct our operations as belligerents without passion and ourselves observe with proud punctilio the principles of right and of fair play we profess to be fighting for.

I have said nothing of the governments allied with the Imperial government of Germany because they have not made war upon us or challenged us to defend our right and our honor.

The Austro-Hungarian government has, indeed avowed its unqualified indorsement and acceptance of the reckless and lawless submarine warfare adopted now without disguise by the Imperial German government, and it has therefore not been possible for this government to receive Count Tarnowski, the Ambassador recently accredited to this government by the Imperial and Royal government of Austria-Hungary; but that government has not actually engaged in warfare against citizens of the United States on the seas, and I take the liberty, for the present at least, of postponing a discussion of our relations with the authorities at Vienna.

We enter this war only where we are clearly

> forced into it because there are no other means of defending our rights.
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> It will be all the easier for us to conduct ourselves as belligerents in a high spirit of right and fairness because we act without animus, not in enmity toward a people or with the desire to bring any injury or disadvantage upon them, but only in armed opposition to an irresponsible government which has thrown aside all considerations of humanity and of right and is running amuck.
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> We are, let me say again, the sincere friends of the German people, and shall desire nothing so much as the early reëstablishment of intimate relations of mutual advantage between us—however hard it may be for them, for the time being, to believe that this is spoken from our hearts.
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> We have borne with their present government through all these bitter months because of that friendship—exercising a patience and forbearance which would otherwise have been impossible. We shall, happily, still have an opportunity to prove that friendship in our daily attitude and actions toward the millions of men and women of German birth and native sympathy who live amongst us and share our life, and we shall be proud to prove it toward all who are in fact loyal to their neighbors and to the government in the hour of test. They are, most of them, as true and loyal Americans as if they had never known any other fealty or allegiance. They will be prompt to stand with us in rebuking and restraining the few who may be of a different mind and purpose.
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> If there should be disloyalty, it will be dealt with with a firm hand of stern repression; but, if it lifts its head at all, it will lift it only here and there and without countenance except from a lawless and malignant few.
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> It is a distressing and oppressive duty, gentlemen of the Congress, which I have performed in thus addressing you. There are, it may be, many months of fiery trial and sacrifice ahead of us. It is a fearful thing to lead this great peaceful people into war, into the most terrible and disastrous of all wars, civilization itself seeming to be in the balance. But the right is more precious than peace, and we shall fight for the things which we have always carried nearest our hearts—for democracy, for the right of those who submit to authority to have a voice in their own governments, for the rights and liberties of small nations, for a universal dominion of right by such a concert of free peoples as shall bring peace and safety to all nations and make the world itself at last free.
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> To such a task we can dedicate our lives and our fortunes, everything that we are and everything that we have, with the pride of those who know that the day has come when America is privileged to spend her blood and her might for the principles that gave her birth and happiness and the peace which she has treasured. God helping her, she can do no other.

The president was many times interrupted with applause during the delivery of the address. On the following day the Foreign Affairs Committee of both Houses met to consider war resolutions introduced immediately after the president's address. The resolution finally submitted was as follows:

> "Whereas, The Imperial German government has committed repeated acts of war against the government and the people of the United States of America, therefore be it
>
> "Resolved, By the Senate and House of Representatives of the United States of America in Congress assembled, that the state of war between the United States and the Imperial German government, which has thus been thrust upon the United States, is hereby formally declared and that the president be, as he is hereby, authorized and directed to employ the entire naval and military forces of the United States and the resources of the government to carry on war against the Imperial German government; and, to bring the conflict to a successful termination, all of the resources of the country are hereby pledged by the Congress of the United States."

In the Senate, where it had been introduced, its adoption was opposed by Senator Stone, chairman of the Foreign Relations Committee, and by Senator La Follette, who insisted on the regular order, letting it lay over for one day. On April 4, the Senate met with the intention of passing the resolution before adjournment. A debate continued until 11 o'clock at night, and was finally passed by a vote of 86 to 6. Those who opposed it were La Follette of Wisconsin, Gronna of North Dakota, Norris of Nebraska, Stone of Missouri, Lane of Oregon, and Vardaman of Mississippi. These were all included in the original group of twelve who had prevented a vote on the Armed Ship Bill. Three of this group, O'Gorman, Clapp, and Works did not return to the Senate. Three others abandoned their former opposition and voted for the resolution. The resolution was at once taken to the House, where, after a debate which continued until the early morning of April 6, it was passed by a vote of 373 to 50. The president signed the resolution in the afternoon of the same day. At the same time he issued a proclamation notifying the world that a state of war existed between the United States and Germany, and outlining regulations of the conduct of alien enemies resident within American jurisdiction.

Although the declaration of war referred only to Germany, Austria-Hungary on April 9, and Turkey on April 21, broke off relations. Bulgaria took no action.

Activities of Government and People. Prompt action followed President Wilson's signing of the resolution. All American ships at foreign stations and the governors and military posts of American insular possessions were notified by wireless of the existence of war. Orders were issued by the navy department for the mobilization of the fleet, and the naval reserve was called to the colors. The navy at once proceeded to seize all radio stations in the country. Congress voted the war fund of $100,000,000 for the use of the president at his discretion. One of the first acts of the government was to seize every German and Austrian vessel in the harbors of the country and its possessions. There was 91 of these aggregating 630,000 gross tonnage. The largest group was in New York harbor. Here were 27 vessels including the *Vaterland*, *George Washington*, and the *Kaiser Wilhelm II*. The first of these was the largest vessel afloat. The Austrian vessels seized were held subject to payment as the United States was not at war with Austria-Hungary. The immigration authorities took charge of all the German officers and crews who were held to be in the status of intended immigrants whose eligibility for entrance into the country was in question until the end of the war. This decision carried with it internment. It was found upon examination that the machinery of most of the German ships had been damaged to prevent their being used as transports, the result of a concerted movement under the direction of the German government. This dated from the severance of relations on February 3, 1917.

Together with the seizure of these ships came the arrest of Germans suspected of being spies. Several of these had already been convicted of violating American neutrality, and were at liberty under bond pending appeals. Others were under indictment and awaiting trial. The remainder were suspected persons who had long been watched by the Federal authorities. A proclamation was issued by the president warning citizens and aliens against the commission of treason. It was deemed unnecessary to intern all Germans and German reservists and they were notified that they would not be molested so long as they conducted themselves in accordance with American law.

Congress continued the debate of war measures, and the House, on April 14, passed without a dissenting vote, a bill providing for a loan of $7,000,000,000. See FINANCIAL REVIEW.

The president, on the following day, issued "a call to service," in which he appealed especially to the agricultural and industrial workers of the country to put forth their utmost efforts to aid in providing and equipping the armies in Europe. He said:

> "We must supply abundant food not only for ourselves and for our armies and our seamen, but also for a large part of the nations with whom we have now made common cause, in whose support and by whose sides we shall be fighting.
>
> "We must supply ships by the hundreds out of our shipyards to carry to the other side of the sea, submarines or no submarines, what will every day be needed there, and abundant materials out of our fields and our mines and our factories with which not only to clothe and equip our own forces on land and sea, but also to clothe and support our people, for whom the gallant fellows under arms can no longer work; to help clothe and equip the armies with which we are coöperating in Europe, and to keep the looms and manufactories there in raw material; coal to keep the fires going in the ships at sea and in the furnaces of hundreds of factories across the sea; steel out of which to make arms and ammunition both here and there; rails for worn out railways back of the fighting fronts; locomotives and rolling stock to take the place of those every day going to pieces; mules, horses, cattle for labor and for military service; everything with which the people of England and France and Italy and Russia have usually supplied themselves, but cannot now afford the men, the materials, or the machinery to make."

The chief war measure of the government introduced in Congress was a bill "to increase temporarily the military establishment of the United States." Its chief feature was the provision for a selective draft (see below). An account of this measure will be found in the article MILITARY PROGRESS and a note of the procedure of its passage in Congress will be found in the article UNITED STATES, *Sixty-Fifth Congress*. Other important measures were the Food Control Bill, which is discussed in the article FOOD CONTROL, and the Espionage Bill, which is treated under the article UNITED STATES, *Sixty-Fifth Congress*.

The entry of the United States into the war was received with great rejoicing by the people of the allied countries. Great Britain and France at once made arrangements to send delegates to a war council at Washington in order to arrange the details of American participation, and to negotiate further loans to the Allies.

An executive order made public on April 13 announced the establishment of defense areas at the entrance to the chief harbors of the Atlantic and Pacific coasts, the Gulf of Mexico, and the insular colonies. One of the reasons for the restrictions in these areas was the presence of German commerce raiders in the western Atlantic.

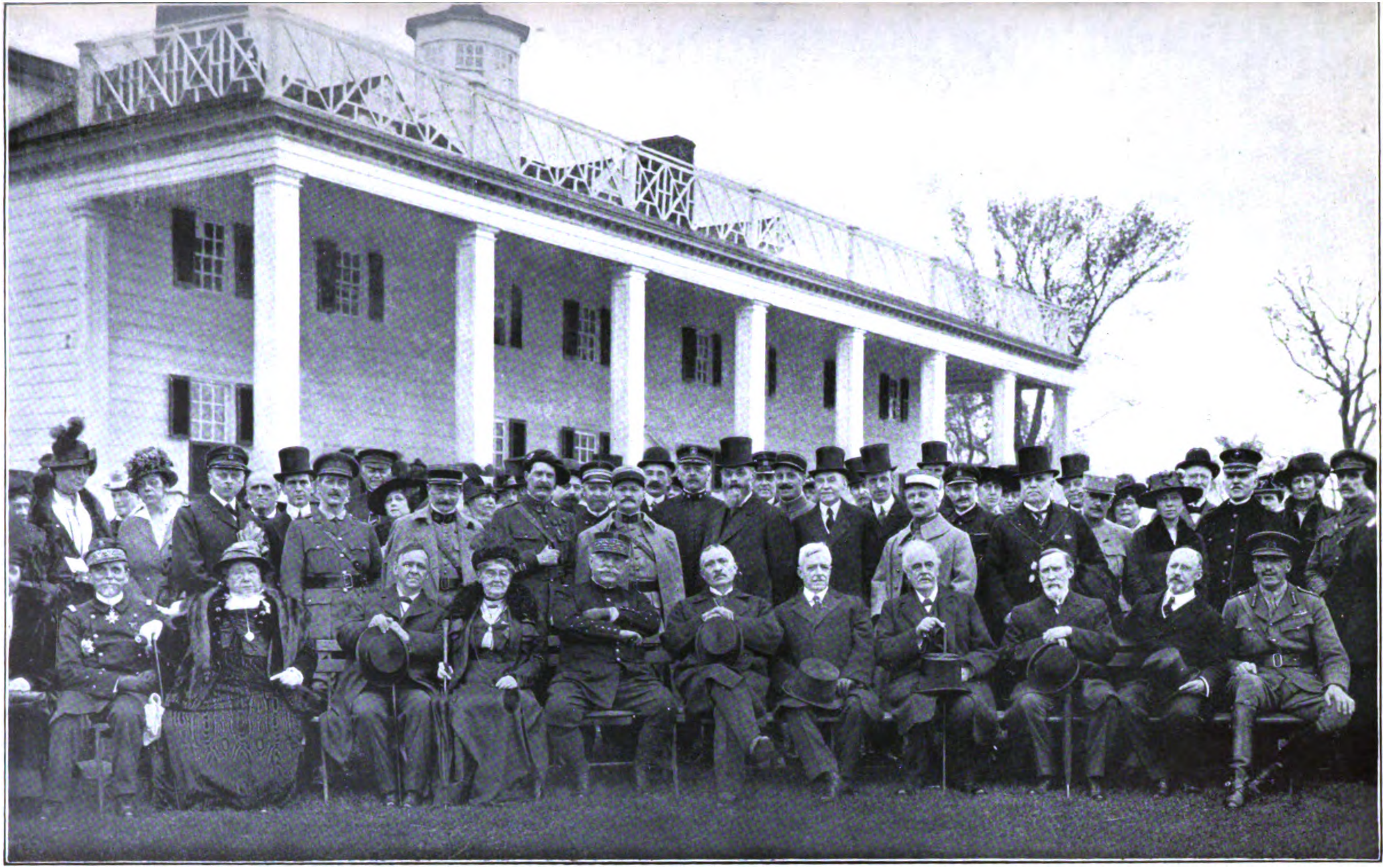
Mr. Herbert Hoover, head of the American commission for relief in Belgium, was appointed chairman of the newly created Food Board, and at once began his work of conservation of the food resources of the country.

MISSIONS FROM ABROAD. About the middle of April, the expected envoys from France and Great Britain reached the United States. The British mission was headed by Arthur James Balfour, the British foreign secretary, and included also a number of noted military and naval officers and financiers. On April 22 the mission arrived in Washington to confer with President Wilson. Simultaneously with the arrival of these commissioners to the United States the entry of this country into the war was celebrated in England where, on April 20, for the first time in history, a foreign flag was raised over the Houses of Parliament. Both Houses passed the following resolution: "This House desires to express to the government and people of the United States of America their profound appreciation of the action of their government in joining the Allied powers and thus defending the high cause of freedom and rights of humanity against the gravest menace by which they ever have been faced."

On April 24, the war commissioners from the French republic reached Hampton Roads and at once proceeded to Washington on the president's yacht, the *Mayflower*. The movements of the commission had been kept a profound secret in order to prevent any interference of their progress. As soon as their presence had become known, their journey to Washington became a triumphant procession. It was probably without parallel in the history of the United States since the visit of Lafayette. The commission was headed by René Viviani, former premier, and Marshal Joffre, former commander of the French armies. The latter was the figure that appealed most to the sympathies and affections of the American people, and this was displayed on every occasion in which he appeared. Another noted member of the commission was the Marquis de Chambrun, a descendant of Lafayette, and a leader in the French Chamber of Deputies. The commission on reaching Washington paid its respects to President Wilson, and at once began to take counsel with the British commissioners and with the civil and military heads of the American army and navy.

The Russian revolution which occurred in February created the most sympathetic feeling and interest in the United States. President Wilson at once resolved to send to Russia a war mission, to consult with the authorities of that country and to assist in the establishment of a stable government. Elihu Root, former secretary of state, was appointed chairman of the commission, which included also representatives of the army and navy, financial and transportation systems (see below).

Following the conference in Washington, the French commissioners began an extensive tour in the Eastern and Middle-Western States, including a visit to Chicago, Kansas City, St. Louis, Springfield, Ill., Philadelphia, New York, and Boston. The party left Washington on May 3, and reached Chicago on the following day. The commission was received with enthusiasm especially in Chicago. Prior to setting out on this journey, the British and French commissioners, on April 29, visited Mt. Vernon to pay their respects to George Washington. M. Viviani delivered an eloquent oration on the significance of America's entrance into the great war. Mr. Balfour, as representative of the British mission, also made a notable address. Following their visit to Mt. Vernon, the commissioners met the Senators and Representatives on the floor of Congress. It became known at this



From Committee on Public Information

ANGLO-FRENCH COMMISSION

Members of the British and French Commissions to the United States visiting Mt. Vernon to pay a tribute to the memory of Washington. In the front row, reading from left to right, Vice Admiral Chocheprat, of the French Navy; Mrs. Eugene Van Rensselaer, Vice Regent for West Virginia of the Mt. Vernon Association; Secretary Daniels; Miss Harriet Clayton Comegys, Regent of the Mt. Vernon Association; Field Marshall Joffre; M. Viviani, head of the French Commissioners; Secretary Lansing; Right Hon. A. J. Balfour, head of the British Commissioners; George Foster, Premier of Canada; Sir Cecil Spring Rice, British Ambassador; and Maj. Gen. G. T. M. Bridges, of the British Commission. Standing back of Secretary Daniels is Sergeant Dryfus, of the French Army, at his left Col. Fabri, and next to him Col. Ramond. Next to him, behind M. Viviani, is M. Hovelacque, Inspector General of Public Instruction in France; next to him is the Marquis de Chambrun, a descendant of La Fayette. Next is Maj. Requin and Secretary Franklin K. Lane.

time that Marshal Joffre and other members of the French commission had laid stress upon the necessity of at once sending an army to France. In a statement issued by him, he expressed his belief that American recruits could best be trained behind the battle lines in France.

The French commission, following its journey through the Middle West, arrived, on May 9, in New York City, where elaborate preparation had been made for their reception. They were received by Mayor Mitchel at City Hall, where a great throng of people had gathered to welcome them. The commission spent several days in the city, and wherever its members appeared they were received with the greatest evidence of enthusiasm. Marshal Joffre attended the unveiling in Brooklyn of a memorial tablet to Lafayette. Columbia University conferred upon M. Viviani the degree of Doctor of Laws. This degree was also conferred upon Mr. Balfour in his absence.

While the British and French missions were being honored in New York City, an Italian mission, headed by Prince Ferdinand of Savoy, and including many notable persons, among whom was William Marconi, the famous scientist, arrived in New York City. This mission at once went to Washington where it began conferences with the government authorities. On June 4 the mission began a tour of the South, Middle-West, and East, including the cities of Atlanta, New Orleans, Pittsburgh, and Chicago, arriving in New York City on June 12. They were everywhere received with the same enthusiasm with which the French and British envoys had been greeted.

To the list of Allied countries which had sent missions to the United States, Belgium was now added. The head of the commission was Baron Ludovic Moncheur, who had formerly been the Belgian minister in Washington. Other members were General Leclercq, Hector Carlier, Mr. Osterricth, and Count Louis d'Ursel. On June 18 President Wilson received the commission, and Baron Moncheur delivered to him a letter from King Albert expressing satisfaction at the entry of the United States into the war and appreciation of American aid in relieving distress. Baron Moncheur also delivered an eloquent address in which he expressed the gratitude of his country for the services rendered by the citizens of the United States. To this the president replied in fitting terms. He said:

> "The American people have been able to understand and glory in the unflinching heroism of the Belgian people and their Sovereign, and there is not one among us who does not to-day welcome the opportunity of expressing to you our heartfelt sympathy and friendship, and our solemn determination that on the inevitable day of victory, Belgium shall be restored to the place she has so richly won among the self-respecting and respected nations of the earth."

Following the reception of the Belgian commission, came a commission from Russia headed by Boris A. Bakhmetieff. The Russian and Belgian war missions on June 24 visited the tomb of Washington at Mt. Vernon, where Baron Moncheur and Bakhmetieff delivered appropriate and eloquent addresses. The Belgian mission, on June 22, was received by the Senate, and Baron Moncheur addressed that body, and was warmly received.

A mission from Rumania was received by the secretary of state on July 2. It was headed by the Rev. Basil Lucaciu, president of the Rumanian League, and included a member of the Rumanian army.

A special Japanese mission, headed by Viscount Ishii, Ambassador extraordinary, arrived in the United States in August. The mission included in addition to Viscount Ishii the following: Vice-Admiral Takeshita, Imperial Japanese Navy; Maj. Gen. Sugano, Imperial Japanese Army; Mr. Masanao Hamihara, Consul General at San Francisco; Mr. Matsuzo Nagai, secretary of the foreign office; Commander Ando, Imperial Japanese Navy; Mr. Tadenao Imai, vice consul; Mr. Tashiro Owaku, secretary; Mr. Douglas L. Dunbar, American secretary to the mission.

The mission, on August 14, was welcomed to the United States by Secretary Lansing, and on August 21 Viscount Ishii presented his credentials, as Ambassador, to the president. The commission afterward made a tour of the principal cities of the country. An important result of its visit was the agreement between the United States and Japan, which is noted in the section *Foreign Relations* in the article UNITED STATES.

THE SELECTIVE DRAFT. The president, acting under the provisions of the Selective Draft Law, issued on May 18 a stirring proclamation in which he called upon every man in the country between the ages of 21 and 30 to register his readiness for army service. This proclamation fixed June 5 as the day for army registration.

The registration began on June 5, and went on during the following week. The total registration was in the neighborhood of 9,500,000. The census established the total number of males of the country within the registration age to be 10,298,000, but this did not make allowance for about 600,000 men already in the military and naval service, who were not required to register. See MILITARY PROGRESS.

AMERICAN EXPEDITIONARY FORCE. On May 18, the president gave orders for the dispatch to France of an expeditionary force of approximately one division of regular troops, under the command of Gen. John J. Pershing (q.v.). Gen. Pershing and staff were directed to precede the troops across. They were to be followed by the forces as soon as preparations could be made.

It was announced about the middle of May that the first American troops to be sent to France would be nine new regiments of American engineers to be recruited from men with railroad experience. The expedition would comprise a total strength of 11,000 or 12,000 men, including every branch of railroad work necessary to build or repair lines.

An announcement was made on June 8, that Gen. Pershing, with fifty-three officers and members of his party, had reached England in safety. On the same day the announcement was made of the safe arrival in France of a corps of one hundred aviators sent to that country for duty in the anti-submarine operations, or for any other activities that might be given them. These were the first officers and men of the regular fighting forces of the United States to arrive in France. The corps was under the command of Lieut. Kennith Whiting.

On June 13 Gen. Pershing, with his staff, arrived safely in Paris. He had received in London a most cordial reception. He received also a hearty reception in Boulogne, the port at which he landed, and it was continued in Paris. Gen. Pershing was met by Marshal Joffre, who had been appointed by the French government to assist in the organization and training of the American troops. For a further account of the expeditionary force see WAR OF THE NATIONS, *Military Operations*, American Expeditionary Force.

THE NEW ARMY. The gigantic task of providing for the maintenance and training of the new army to be raised under the draft law was at once begun. September 5 was the day for the gathering of the selected men for their assemblage in the different cantonments. On that day, the president issued the following statement:

> *"To the Soldiers of the National Army:*
>
> "You are undertaking a great duty. The heart of the whole country is with you. Everything that you do will be watched with the deepest interest and with the deepest solicitude not only by those who are near and dear to you, but by the whole Nation besides. For this great war draws us all together, makes us all comrades and brothers, as all true Americans felt themselves to be when we first made good our national independence. The eyes of all the world will be upon you, because you are, in some special sense, the soldiers of freedom.
>
> "Let it be your pride, therefore, to show all men everywhere not only what good soldiers you are, but also what good men you are, keeping yourselves fit and straight in everything, and pure and clean through and through. Let us set for ourselves a standard so high that it will be a glory to live up to it, and then let us live up to it and add a new laurel to the crown of America. My affectionate confidence goes with you in every battle and every test. God keep and guide you!"

Sixteen national army camps were constructed in various parts of the United States at points selected by the War Department. The camps were carefully laid out by experienced town planners and engineers to give best results considering all viewpoints.

A typical cantonment city will house 40,000 men. Each barrack building will house 150 men and provide 500 cubic feet of air space per man. Such a cantonment complete contains between 1000 and 1200 buildings and covers about 2000 acres. In addition, each cantonment has a rifle range, drill, parade, and maneuver grounds of about 2000 acres. In many cases all or a large part of the entire site had to be cleared of woods and stumps. The various military units were located on principal or primary roads—a regiment being treated as a primary unit. About 25 miles of roads were constructed at each cantonment, and sewers, water supply, lighting facilities, and other improvements installed.

An infantry regiment requires 22 barrack buildings, 6 for officers' quarters, 2 storehouses, 1 infirmary building, 28 lavatories, with hot and cold shower baths, or a total of 59 buildings. In addition to the buildings necessary for the regimental units, each cantonment has buildings for divisional headquarters, quartermaster depots, laundry receiving and distributing stations, base hospitals having 1000 beds, post exchanges, and other buildings for general use.

At several of the cantonments remount stations were provided, some of them having a capacity to maintain 12,000 horses.

Following are the names and locations of the national army camps:

Site	*Camp*
American Lake, Wash.	Camp Lewis
Annapolis Junction, Md.	Camp Meade
Atlanta, Ga.	Camp Gordon
Ayer, Mass.	Camp Devens
Battle Creek, Mich.	Camp Custer
Chillicothe, Ohio	Camp Sherman
Columbia, S. C.	Camp Jackson
Des Moines, Iowa	Camp Dodge
Fort Riley, Kans.	Camp Funston
Fort Sam Houston, Tex.	Camp Travis
Little Rock, Ark.	Camp Pike
Louisville, Ky.	Camp Taylor
Petersburg, Va.	Camp Lee
Rockford, Ill.	Camp Grant
Wrightstown, N. J.	Camp Dix
Yaphank, L. I.	Camp Upton

Sixteen divisional camps were established for the mobilization and training of the national guard as follows:

Site	*Camp*
Charlotte, N. C.	Camp Greene
Spartanburg, S. C.	Camp Wadsworth
Augusta, Ga.	Camp Hancock
Anniston, Ala.	Camp McClellan
Greenville, S. C.	Camp Sevier
Macon, Ga.	Camp Wheeler
Waco, Tex.	Camp MacArthur
Houston, Tex.	Camp Logan
Deming, N. M.	Camp Cody
Fort Sill, Okla.	Camp Doniphan
Fort Worth, Tex.	Camp Bowie
Montgomery, Ala.	Camp Sheridan
Hattiesburg, Miss.	Camp Shelby
Alexandria, La.	Camp Beauregard
Buena Vista, Cal.	Camp Kearny
Palo Alto, Cal.	Camp Fremont

See MILITARY PROGRESS.

VOLUNTEER DIVISION. At the time of signing the Selective Draft Law, the president issued a statement, which was chiefly of interest as related to the voluntary division which Theodore Roosevelt proposed to raise. The conference committees of the two Houses had agreed to accept such a division. In regard to this, the president said:

> "I shall not avail myself, at any rate at the present stage of the war, of the authorization conferred by the act to organize volunteer divisions. To do so would seriously interfere with the carrying out of the chief and most immediately important purpose contemplated by this legislation: the prompt creation and early use of an effective army, and would contribute practically nothing to the effective strength of the armies now engaged against Germany. I understand that the section of this act which authorizes the creation of volunteer divisions in addition to the draft was added with a view to providing an independent command for Mr. Roosevelt and giving the military authorities an opportunity to use his fine vigor and enthusiasm in recruiting the forces now at the Western Front. It would be very agreeable to me to pay Mr. Roosevelt this compliment and the Allies the compliment of sending to their aid one of our most distinguished public men, an ex-president, who has rendered many conspicuous public services and proved his gallantry in many striking ways. Politically, too, it would no doubt have a very fine effect and make a profound impression. But this is not the time or the occasion for compliment or for any action not calculated to contribute to the immediate success of the war. The business now in hand is undramatic and calls for practical scientific definiteness and precision. I shall act with regard to it at every step and in every particular under expert and professional advice, from both sides of the water.
>
> "That advice is that the men most needed are men of the ages contemplated in the draft provisions of the present bill, not men of the age and sort contemplated on the section which authorizes the formation of volunteer units, and that for the

> preliminary training of the men who are to be drafted we shall need all of our experienced officers. Mr. Roosevelt told me, when I had the pleasure of seeing him a few weeks ago, that he would wish to have associated with him some of the most effective officers of the Regular Army. He named many of those whom he would desire to have designated for the service, and they were men who can not possibly be spared from the too small force of officers at our command for the much more pressing and necessary duty of training regular troops to be put into the field in France and Belgium as fast as they can be got ready. The first troops sent to France will be taken from the present forces of the Regular Army and will be under the command of trained soldiers only.
>
> "The responsibility for the successful conduct of our own part in this great war rests upon me. I could not escape it if I would. I am too much interested in the cause we are fighting for to be interested in anything but success. The issues involved are too immense for me to take into consideration anything whatever except the best, most effective, most immediate means of military action. What these means are, I know from the mouths of men who have seen war as it is now conducted, who have no illusions, and to whom the whole grim matter is a matter of business. I shall centre my attention upon those means and let everything else wait. I should be deeply to blame should I do otherwise, whatever the argument of policy or of personal gratification or advantage."

As the result of this action on the part of the president, Mr. Roosevelt at once abandoned his efforts to raise the proposed division.

THE NAVY. The first shot from an American gun in the war was fired on April 19, the anniversary of the battle of Lexington. The gun was mounted on the American steamer *Mongolia* plying between the United States and England. A periscope of a submarine was sighted ahead of the vessel, and Lieut. Bruce R. Ware, who was in command of the gunners' crew, at once gave the command to fire. The submarine disappeared but rose again, this time aside of the *Mongolia*. Another shot was fired which shattered the periscope and apparently destroyed the submarine, which did not again appear.

Navy preparations rapidly went forward and Maj. Gen. George W. Goethals, head of the United States Shipping Board Emergency Fleet Corporation, made contracts for the building of the first ten ships of the wooden merchant fleet. It was announced that one thousand of these ships would ultimately be constructed. For a detailed discussion of the navy in connection with shipbuilding, see SHIPBUILDING.

It became known about the middle of May that a squadron of American destroyers under Rear Admiral Sims (q.v.) had arrived at Queenstown on May 4, and had at once begun operation against the German U-boats. The American ships were received with great enthusiasm at the British port. After the commander of the British fleet had greeted the American commander he asked "When can you be ready for business?" and the American commander replied: "We can start at once."

On June 7, the Navy Department made public the details of an encounter between the American ship *Silver Shell* and a German submarine, which occurred on May 30. The steamer was armed and the guns were manned by an American navy crew. The submarine was first seen at a distance of 7000 yards. On its approach to the ship, the guns of the vessel were fired and the submarine responded. A fight ensued which continued for an hour and a half, during which the submarine fired 35 shots and the steamer 25. The last shot of the steamer apparently struck the submarine, which rose high above the water and then disappeared. No damage was suffered by the steamer.

See section below on *Naval Engagements*.

LIBERTY LOAN. Early in May, Secretary McAdoo, of the Treasury, announced that arrangements had been made for popular subscription to the first war loan of $2,000,000,000. The loan was entirely successful and greatly oversubscribed. Concerning this and subsequent issues see FINANCIAL REVIEW. It was also announced that the first installment of loans to France, Italy, and Russia would be made during May, and that loans to Belgium, Serbia, and other Allied countries were also under consideration.

MISSION TO RUSSIA. We have already noted the fact that the president had appointed former Senator Root as the head of the commission to Russia. The United States government had been the first to recognize the new government of Russia (March 27). The news was received on June 4, that the American mission had safely landed in Russia. Its members in addition to Mr. Root included John R. Mott, Cyrus McCormick, Samuel R. Barton, James Duncan, and Charles Edward Russell, with Maj. Gen. Hugh L. Scott and Rear Admiral James H. Glennon, representing respectively the army and navy. The commission was also accompanied by a number of aides and clerks. They were joined in Russia by Charles R. Crane, Maj. Stanley Washburn, and others. The commission proceeded at once to Petrograd, where, on June 15, Mr. Root delivered to the head of the provincial government the following communication from President Wilson:

> In view of the approaching visit of the American delegation to Russia to express the deep friendship of the American people for the people of Russia and to discuss the best and most practical means of coöperation between the two peoples in carrying the present struggle for the freedom of all peoples to a successful consummation, it seems opportune and appropriate that I should state again, in the light of this new partnership, the objects the United States has had in mind in entering the war. Those objects have been very much beclouded during the past few weeks by mistaken and misleading statements, and the issues at stake are too momentous, too tremendous, too significant for the whole human race to permit any misinterpretations or misunderstandings, however slight, to remain uncorrected for a moment.
>
> The war has begun to go against Germany, and in their desperate desire to escape the inevitable ultimate defeat those who are in authority in Germany are using every possible instrumentality, are making use even of the influence of groups and parties among their own subjects to whom they have never been just or fair or even tolerant, to promote a propaganda on both sides of the sea which will preserve for them their influence at home and their power abroad, to the undoing of the very men they are using.
>
> The position of America in this war is so clearly avowed that no man can be excused for mistaking it. She seeks no material profit or aggrandizement of any kind. She is fighting for no advantage or selfish object of her own, but for the liberation of peoples everywhere from the aggressions of autocratic force. The ruling classes in Germany have begun of late to profess a like liberality and justice of purpose, but only to preserve the power they have set up to Germany and the selfish advantages which they have wrongly gained for themselves and their private projects of power all the way from Berlin to Bagdad and beyond. Government after government has by their influence, without open conquest of its territory, been linked together in a net of intrigue directed against nothing less than the peace and liberty of the world. The meshes of that intrigue must be broken, but cannot be broken unless wrongs already done are undone; and adequate measures must be taken to

prevent it from ever again being rewoven or repaired.

Of course, the Imperial German government and those whom it is using for their own undoing are seeking to obtain pledges that the war will end in the restoration of the *status quo ante*. It was the *status quo ante* out of which this iniquitous war issued forth, the power of the Imperial German government within the empire and its wide-spread domination and influence outside of that empire. That status must be altered in such fashion as to prevent any such hideous thing from ever happening again.

We are fighting for the liberty, the self-government, and the undictated development of all peoples, and every feature of the settlement that concludes this war must be conceived and executed for that purpose. Wrongs must first be righted, and then adequate safeguards must be created to prevent their being committed again. We ought not to consider remedies merely because they have a pleasing and sonorous sound. Practical questions can be settled only by practical means. Phrases will not accomplish the result. Effective readjustments will; and whatever readjustments are necessary must be made.

But they must follow a principle, and that principle is plain. No people must be forced under sovereignty under which it does not wish to live. No territory must change hands except for the purpose of securing those who inhabit it a fair chance of life and liberty. No indemnities must be insisted on except those that constitute payment for manifest wrongs done. No readjustments of power must be made except such as will tend to secure the future peace of the world and the future welfare and happiness of its peoples.

And then the free peoples of the world must draw together in some common covenant, some genuine and practical coöperation that will in effect combine their force to secure peace and justice in the dealings of nations with one another. The brotherhood of mankind must no longer be a fair but empty phrase; it must be given a structure of force and reality. The nations must realize their common life and effect a workable partnership to secure that life against the aggressions of autocratic and self-pleasing power.

For these things we can afford to pour out blood and treasure. For these are the things we have always professed to desire, and unless we pour out blood and treasure now and succeed, we may never be able to unite or show conquering force again in the great cause of human liberty. The day has come to conquer or submit. If the forces of autocracy can divide us they will overcome us: if we stand together, victory is certain and the liberty which victory will secure. We can afford then to be generous, but we cannot afford then or now to be weak or omit any single guarantee of justice and security.

At the same time upon the introduction of the American commission to the Council of Ministers, Mr. Root delivered an address, of which the main points were as follows:

"The news of Russia's new-found freedom brought to America universal satisfaction and joy. From all the land sympathy and hope went out toward the new sister in the circle of democracies, and this mission is sent to express that feeling. The American democracy sends to the democracy of Russia greeting, sympathy, friendship, brotherhood, and Godspeed. . . .

"One fearful danger threatens both nations—the armed forces of military autocracy are at the gates of Russia and her Allies. The triumph of German arms will mean the death of liberty in Russia. No enemy is at the gates of America, but America has come to realize that the triumph of German arms means the death of liberty in the world; that we who love liberty and would keep it must fight for it and fight now when the free democracies of the world may be strong in union and not delay until they may be beaten down separately in succession. So America sends another message to Russia: that we are going to fight and have already begun to fight for your freedom equally with our own and we ask you to fight for our freedom equally with yours. We would make your cause ours and with common purpose and the mutual helpfulness of firm alliance make sure the victory over our common foe."

He then quoted from the president's address on April 2 (see above) the passages relating to the disinterested purpose of the United States in entering the war and its sympathy with the democratic movement in Russia, and declared in conclusion that in the great struggle for human freedom the oldest of the great democracies now sought fraternal union with the youngest.

FLAG DAY ADDRESS. On Flag Day, June 14, the president delivered a notable address which was devoted almost entirely to a discussion of the conditions under which we were at war with Germany. This address, although not an official one, was considered by statesmen in the United States and in the Allied countries, as one of the most satisfactory statements yet issued of the reasons for the warfare against the German Empire. The address was as follows:

MY FELLOW CITIZENS: We meet to celebrate Flag Day because this flag which we honor, and under which we serve, is the emblem of our unity, our power, our thought, and purpose as a nation. It has no other character than that which we give it from generation to generation. The choices are ours. It floats in majestic silence above the hosts that execute those choices, whether in peace or in war. And yet, though silent, it speaks to us—speaks to us of the past, of the men and women who went before us and of the records they wrote upon it. We celebrate the day of its birth, and from its birth until now it has witnessed a great history, has floated on high the symbol of great events, of a great plan of life worked out by a great people. We are about to carry it into battle, to lift it where it will draw the fire of our enemies. We are about to bid thousands, hundreds of thousands, it may be millions, of our men, the young, the strong, the capable men of the nation, to go forth and die beneath it on fields of blood far away—for what? For some unaccustomed thing? For something for which it has never sought before? American armies were never before sent across the seas. Why are they sent now? For some new purpose for which this great flag has never been carried before or for some old, familiar, heroic purpose for which it has seen men, its own men, die on every battlefield upon which Americans have borne arms since the Revolution?

These are questions which must be answered. We are Americans. We in our turn serve America, and can serve her with no private purpose. We must use her flag as she has always used it. We are accountable at the bar of history and must plead in utter frankness what purpose it is we seek to serve.

It is plain enough how we were forced into the war. The extraordinary insults and aggressions of the Imperial German government left us no self-respecting choice but to take up arms in defense of our rights as a free people and of our honor as a sovereign government. The military masters of Germany denied us the right to be neutral. They filled our unsuspecting communities with vicious spies and conspirators and sought to corrupt the opinion of our people in their own behalf.

When they found that they could not do that their agents diligently spread sedition among us and sought to draw our own citizens from their allegiance—and some of these agents were men connected with the official embassy of the German government itself here in our own capital. They sought by violence to destroy our industries and arrest our commerce. They tried to incite Mexico to take up arms against us and to draw Japan into a hostile alliance with her—and that, not by indirection but by direct suggestion from the Foreign Office in Berlin. They impudently denied us the use of the high seas and repeatedly executed their threat that they would send to their death any of our people who ventured to approach the coasts of Europe. And many of our own people were corrupted. Men began to look upon their own neighbors with suspicion and to wonder in their hot resentment and surprise whether there was any community in which hostile intrigue did not lurk. What great nation in such circumstances would not have taken up arms? Much as we had desired peace it was denied us, and not of our own choice. This flag under which we serve would have been dishonored had we withheld our hand.

But that is only part of the story. We know now as clearly as we knew before we were ourselves engaged that we are not the enemies of the German people and that they are not our enemies. They did not originate or desire this hideous war or wish that we should be drawn into it; and we are vaguely conscious that we are fighting their cause, as they will some day see it, as well as our own. They are themselves in the grip of the same sinister power that has now at last stretched its ugly talons out and drawn blood from us. The whole world is at war because the whole world is in the grip of that power and is trying out the great battle which shall determine whether it is to be brought under its mastery or fling itself free.

The war was begun by the military masters of Germany, who proved to be also the masters of Austria-Hungary. These men have never regarded nations as peoples, men, women, and children of like blood and frame as themselves, for whom governments existed and in whom governments had their life. They have regarded them merely as serviceable organizations which they could by force or intrigue bend or corrupt to their own purpose. They have regarded the smaller states in particular and the peoples who could be overwhelmed by force as their natural tools and instruments of domination. Their purpose has long been avowed. The statesmen of other nations, to whom that purpose was incredible, paid little attention; regarded what German professors expounded in their class rooms and German writers set forth to the world as the goal of German policy as rather the dream of minds detached from practical affairs, as preposterous private conceptions of German destiny than as the actual plans of responsible rulers; but the rulers of Germany themselves knew all the while what concrete plans, what well advanced intrigues lay back of what the professors and the writers were saying, and were glad to go forward unmolested, filling the thrones of Balkan states with German princes, putting German officers at the service of Turkey to drill her armies and make interest with her government, developing plans of sedition and rebellion in India and Egypt, setting their fires in Persia. The demands made by Austria upon Serbia were a mere single step in a plan which compassed Europe and Asia, from Berlin to Bagdad. They hoped those demands might not arouse Europe, but they meant to press them whether they did or not, for they thought themselves ready for the final issue of arms.

Their plan was to throw a broad belt of German military power and political control across the very centre of Europe and beyond the Mediterranean into the heart of Asia, and Austria-Hungary was to be as much their tool and pawn as Serbia or Bulgaria or Turkey or the ponderous states of the East. Austria-Hungary, indeed, was to become part of the Central German Empire, absorbed and dominated by the same forces and influences that had originally cemented the German states themselves. The dream had its heart at Berlin. It could have had a heart nowhere else. It rejected the idea of solidarity of race entirely. The choice of peoples played no part in it at all. It contemplated binding together racial and political units which could be kept together only by force—Czechs, Magyars, Croats, Serbs, Rumanians, Turks, Armenians—the proud states of Bohemia and Hungary, the stout little commonwealths of the Balkans, the indomitable Turks, the subtle peoples of the East. These peoples did not wish to be united. They ardently desired to direct their own affairs, and would be satisfied only by undisputed independence. They could be kept quiet only by the presence or the constant threat of armed men. They would live under a common power only by sheer compulsion and await the day of revolution. But the German military statesmen had reckoned with all that and were ready to deal with it in their own way.

And they have actually carried the greater part of that amazing plan into execution. Look how things stand. Austria is at their mercy. It has acted, not upon its own initiative or upon the choice of its own people but at Berlin's dictation ever since the war began. Its people now desire peace, but cannot have it until leave is granted from Berlin. The so-called Central Powers are in fact but a single Power. Serbia is at its mercy, should its hands be but for a moment freed. Bulgaria has consented to its will, and Rumania is overrun. The Turkish armies, which Germans trained, are serving Germany, certainly not themselves, and the guns of German warships lying in the harbor at Constantinople remind Turkish statesmen every day that they have no choice but to take their orders from Berlin. From Hamburg to the Persian Gulf the net is spread.

Is it not easy to understand the eagerness for peace that has been manifested from Berlin ever since the snare was set and sprung? Peace, peace, peace has been the talk of her Foreign Office for now a year and more; not peace upon her own initiative but upon the initiative of the nations over which she now deems herself to hold the advantage. A little of the talk has been public, but most of it has been private. Through all sorts of channels it has come to me, and in all sorts of guises, but never with the terms disclosed which the German government would be willing to accept. That government has other valuable pawns in its hands besides those I have mentioned. It still holds a valuable part of France, though with slowly relaxing grasp, and practically the whole of Belgium. Its armies press close upon Russia and overrun Poland at their will. It cannot go further; it dare not go back. It wishes to close its bargain before it is too late and it has little left to offer for the pound of flesh it will demand.

The military masters under whom Germany is bleeding see very clearly to what point fate has brought them. If they fall back or are forced back an inch, their power both abroad and at home will fall to pieces like a house of cards. It is their power at home they are thinking about now more than their power abroad. It is that power which is trembling under their very feet, and deep fear has entered their hearts. They have but one chance to perpetuate their military power or even their controlling political influence. If they can secure peace now with the immense advantages still in their hands which they have up to this point apparently gained, they will have justified themselves before the German people; they will have gained by force what they promised to gain by it, an immense expansion of German power, an immense enlargement of German industrial and commercial opportunities. Their prestige will be secure, and with their prestige their political power. If they fail, their people will thrust them aside: a government accountable to the people themselves will be set up in Germany as it has been in England, in the United States, in France, and in all the great countries of the modern time except Germany. If they succeed they are safe and Germany and the world are undone; if they fail Germany is saved and the world will be at peace. If they succeed America will fall within the menace. We and all the rest of the world must remain armed as they will remain, and must make ready for the next step in their aggression; if they fail the world may unite for peace and Germany may be of the union.

Do you not now understand the new intrigue, the intrigue for peace, and why the masters of Germany do not hesitate to use any agency that promises to effect their purpose, the deceit of the nations? Their present particular aim is to deceive all those who throughout the world stand for the rights of peoples and the self-government of nations; for they see what immense strength the forces of justice and of liberalism are gathering out of this war. They are employing liberals in their enterprise. They are using men, in Germany and without, as their spokesmen whom they have hitherto despised and oppressed, using them for their own destruction—Socialists, the leaders of labor, the thinkers they have hitherto sought to silence. Let them once succeed and these men, now their tools, will be ground to powder beneath the weight of the great military empire they will have set up; the revolutionists in Russia will be cut off from all succor or coöperation in western Europe and a counter-revolution fostered and supported; Germany herself will lose her chance of freedom, and all Europe will arm for the next, the final, struggle.

The sinister intrigue is being no less actively conducted in this country than in Russia and in every country in Europe to which the agents and dupes of the Imperial German government can get access. That government has many spokesmen here, in places high and low. They have learned discretion. They keep within the law. It is opinion they utter now not sedition. They proclaim the liberal purposes of their masters, declare this a foreign war which can touch America with no danger to either her lands or her institutions, set England at the centre of the stage and talk of her ambition to assert economic dominion throughout the world, appeal to our ancient tradition of isolation in the politics of the nations, and seek to undermine the government with false professions of loyalty to its principles.

But they will make no headway. The false betray themselves always in every accent. It is only friends and partizans of the German government whom we have already identified who utter these thinly disguised disloyalties. The facts are

> patent to all the world, and nowhere are they more plainly seen than in the United States, where we are accustomed to deal with facts and not with sophistries, and the great fact that stands out above all the rest is that this is a people's war, a war for freedom and justice and self-government among all the nations of the world, a war to make the world safe for the peoples who live upon it and have made it their own, the German people themselves included, and that with us rests the choice to break through all these hypocrisies and patent cheats and masks of brute force and help set the world free or else stand aside and let it be dominated a long age through by sheer weight of arms and the arbitrary choices of self-constituted masters, by the nations which can maintain the biggest armies and the most irresistible armaments—a power to which the world has afforded no parallel and in the face of which political freedom must wither and perish.
>
> For us there is but one choice. We have made it. Woe be to the man or group of men that seeks to stand in our way in this day of high resolution when every principle we hold dearest is to be vindicated and made secure for the salvation of the nations. We are ready to plead at the bar of history, and our flag shall wear a new lustre. Once more we shall make good with our lives and fortunes the great faith to which we were born, and a new glory shall shine in the face of our people.

The Pope and Peace. From the outset of the war, Pope Benedict had been assiduous in his efforts to establish a permanent peace between the belligerents. These efforts he had carried on with absolute neutrality of purpose and performance. He had gone with great cautiousness about this diplomatic task, and the only encouragement he received was from the Central Powers. On August 1, 1917, the Pope communicated to the various belligerents, a note, inviting these governments to agree on certain points which seemed to him "to offer the basis of a just and lasting peace." This message is discussed in some detail in the article War of the Nations, *The Diplomacy of the War.* In reply to it President Wilson, as spokesman for the United States and her Allies, sent to the Pope, on August 22, the following note:

> Every heart that has not been blinded and hardened by this terrible war must be touched by this moving appeal of His Holiness the Pope, must feel the dignity and force of the humane and generous motives which prompted it, and must fervently wish that we might take the path of peace he so persuasively points out. But it would be folly to take it if it does not in fact lead to the goal he proposes. Our response must be based upon the stern facts and upon nothing else. It is not a mere cessation of arms he desires; it is a stable and enduring peace. This agony must not be gone through with again, and it must be a matter of very sober judgment what will insure us against it.
>
> His Holiness in substance proposes that we return to the *status quo ante bellum*, and that then there be a general condonation, disarmament, and a concert of nations based upon an acceptance of the principle of arbitration; that by a similar concert freedom of the seas be established; and that the territorial claims of France and Italy, the perplexing problems of the Balkan states, and the restitution of Poland be left to such conciliatory adjustments as may be possible in the new temper of such a peace, due regard being paid to the aspirations of the peoples whose political fortunes and affiliations will be involved.
>
> It is manifest that no part of this programme can be successfully carried out unless the restitution of the *status quo ante* furnishes a firm and satisfactory basis for it. The object of this war is to deliver the free peoples of the world from the menace and the actual power of a vast military establishment controlled by an irresponsible government which, having secretly planned to dominate the world, proceeded to carry the plan out without regard either to the sacred obligations of treaty or the long-established practices and long-cherished principles of international action and honor; which chose its own time for the war; delivered its blow fiercely and suddenly; stopped at no barrier either of law or of mercy; swept a whole continent within the tide of blood—not the blood of soldiers only, but the blood of innocent women and children also and of the helpless poor; and now stands balked but not defeated, the enemy of four-fifths of the world. This power is not the German people. It is the ruthless master of the German people. It is no business of ours how that great people came under its control or submitted with temporary zest to the domination of its purpose; but it is our business to see to it that the history of the rest of the world is no longer left to its handling.
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> To deal with such a power by way of peace upon the plan proposed by His Holiness the Pope would, so far as we can see, involve a recuperation of its strength and a renewal of its policy; would make it necessary to create a permanent hostile combination of nations against the German people, who are its instruments; and would result in abandoning the new-born Russia to the intrigue, the manifold subtle interference, and the certain counter-revolution which would be attempted by all the malign influences to which the German government has of late accustomed the world. Can peace be based upon a restitution of its power or upon any word of honor it could pledge in a treaty of settlement and accommodation?
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> Responsible statesmen must now everywhere see, if they never saw before, that no peace can rest securely upon political or economic restrictions meant to benefit some nations and cripple or embarrass others, upon vindictive action of any sort, or any kind of revenge or deliberate injury. The American people have suffered intolerable wrongs at the hands of the Imperial German government, but they desire no reprisal upon the German people, who have themselves suffered all things in this war, which they did not choose. They believe that peace should rest upon the rights of peoples, not the rights of governments—the rights of peoples great or small, weak or powerful—their equal right to freedom and security and self-government and to a participation upon fair terms in the economic opportunities of the world, the German people of course included if they will accept equality and not seek domination.
>
> The test, therefore, of every plan of peace is this: Is it based upon the faith of all the peoples involved or merely upon the word of an ambitious and intriguing government, on the one hand, and of a group of free peoples, on the other? This is a test which goes to the root of the matter; and it is the test which must be applied.
>
> The purposes of the United States in this war are known to the whole world, to every people to whom the truth has been permitted to come. They do not need to be stated again. We seek no material advantage of any kind. We believe that the intolerable wrongs done in this war by the furious and brutal power of the Imperial German government ought to be repaired, but not at the expense of the sovereignty of any people—rather a vindication of the sovereignty both of those that are weak and of those that are strong. Punitive damages, the dismemberment of empires, the establishment of selfish and exclusive economic leagues, we deem inexpedient and in the end worse than futile, no proper basis for a peace of any kind, least of all for an enduring peace. That must be based upon justice and fairness and the common rights of mankind.
>
> We can not take the word of the present rulers of Germany as a guarantee of anything that is to endure, unless explicitly supported by such conclusive evidence of the will and purpose of the German people themselves as the other peoples of the world would be justified in accepting. Without such guarantees treaties of settlement, agreements for disarmament, covenants to set up arbitration in the place of force, territorial adjustments, reconstitutions of small nations, if made with the German government, no man, no nation could now depend on. We must await some new evidence of the purposes of the great peoples of the Central Powers. God grant it may be given soon and in a way to restore the confidence of all peoples everywhere in the faith of nations and the possibility of a covenanted peace.

German Intrigues and Propaganda. Extraordinary revelations during the year of the activities of the German Foreign Office, both before and after the entry of the United States into the war aroused much indignation. These revelations included the work of propaganda in the United States and in Mexico, and in several of the South American countries.

A matter of the greatest interest and importance was the publication on August 14, 1917, of the personal message of the German emperor to President Wilson, sent on August 14, 1914, which formed a defense of Germany's entrance into the war. This message, which was sent in August, 1914, by Ambassador Gerard to President Wilson, had not at the time been made public in its complete form, which was as follows:

"Private and confidential.
"For the President personally.

"One. The Royal Highness Prince Henry was received by His Majesty King George V in London, who empowered him to transmit to me verbally that England would remain neutral if war broke out on the continent involving Germany and France, Austria and Russia. This message was telegraphed to me by my brother from London after his conversation with His Majesty the King and repeated verbally on the 29th July.

"Two. My ambassador in London transmitted a message from Sir Edward Grey to Berlin saying that only in case France was likely to be crushed England would interfere.

"Three. On the 30th my ambassador in London reported that Sir Edward Grey in the course of a private (sic) conversation, told him that if the conflict remained localized between Russia—not Servia—and Austria, England would not move, but if we mixed in the fray she would take quick decisions and grave manœuvres; in other words, if I left my ally, Austria, in the lurch to fight alone England would not touch me.

"Four. This communication being directly counter to the King's message to me, I telegraphed to His Majesty on the 29th or 30th thanking him for kind message through my brother and begging him to use all his power to keep France and Russia, his allies, from making any warlike preparations calculated to disturb my work on mediation, stating that I was in constant communication with His Majesty the Czar. In the evening the King kindly answered that he had ordered his government to use every possible influence with his allies to repudiate taking any provocative military measures. At the same time His Majesty asked me I should transmit to Vienna the British proposal that Austria was to take Belgrade and a few other Servian towns and a strip of country as a main mise (sic) to make sure that the Servian promises on paper should be fulfilled in reality. This proposal was in the same moment telegraphed to me from Vienna for London quite in conjunction with the British proposal; besides I had telegraphed to His Majesty the Czar the same as an idea of mine before I received the two communications from Vienna and London. As both were of the same opinion, I immediately transmitted the telegrams vice versa to Vienna and London. I felt that I was able to tide the question over and was happy at the peaceful outlook.

"Five. While I was preparing a note to His Majesty the Czar the next morning to inform him that Vienna, London, and Berlin were agreed about the treatment of affairs, I received the telephone message from his excellency the chancellor that in the night before, the Czar had given the order to mobilize the whole of the Russian Army, which was of course also meant against Germany; whereas up till then the southern armies had been mobilized against Austria.

"Six. In a telegram from London my ambassador informed me he understood British government would guarantee neutrality of France and wished to know whether Germany would refrain from attack. I telegraphed to His Majesty the King personally that mobilization being already carried out could not be stopped, but if His Majesty could guarantee with his armed forces the neutrality of France I would refrain from attacking her, leave her alone, and employ my forces elsewhere. His Majesty answered that he thought my offer was based on a misunderstanding, and as far as I can make out Sir Edward Grey never took my offer into serious consideration. He never answered it. Instead he declared England had to defend Belgian neutrality, which had to be violated by Germany on strategical grounds, news having been received that France was already preparing to enter Belgium and the King of the Belgians having refused my petition for a free passage under guarantee of his country's freedom. I am most grateful for the President's message. Wilhelm."

The Committee on Public Information made public on September 27 revelations in regard to German propaganda in the United States, derived from newspapers seized in 1916 from a prominent agent, Wolf von Igel. This man established an office in New York in the autumn of 1914, where he carried on propaganda work in its most varied forms. In April, 1916, while von Igel was preparing papers to be transmitted to the German embassy at Washington, his office was entered by four secret service agents, who put him under arrest, and took charge of his papers. Ambassador Count von Bernstorff protested against this seizure, declaring the papers seized were official, and were exempt from such seizure. When the papers were examined, they were found to contain evidence which made it clear that German agents were violating the laws of the United States. planning for the destruction of lives and property and merchant vessels on the high seas, forming far-reaching plots against Great Britain and Ireland, the United States and Mexico; and endeavoring to corrupt American writers and lecturers. A special system was maintained under the guise of an American Information Bureau, for the purpose of stirring up labor troubles in ammunition plants and was engaged in the preparation of bombs for the destruction of American munition factories and ships. The papers included letters to von Bernstorff commending John Devoy, a prominent Irish-American, as a valuable man for carrying on German propaganda. Reports in regard to Devoy's activities were also included. A letter relating to Judge Cohalan of New York was said to show that he had offered advice in regard to stirring up revolutions in Ireland. Both Devoy and Judge Cohalan denied any guilty connections with the German government. Evidence was found to indicate that several American citizens, who were well known as journalists and lecturers, had received payment from German authorities for propaganda work. These included Edwin Emerson and F. J. Archibald, who was arrested in 1916 while carrying important papers to Germany from the United States. The documents revealed through this seizure were of the greatest value in searching for evidence of German activities, and in bringing about the arrest of many suspected persons.

The State Department, through its secret service, discovered, during the year, that messages had been regularly sent between Argentina and Germany, through the medium of the Swedish minister to Argentina, and that the German minister in Mexico had, in March, 1916, strongly commended the work in behalf of Germany done by Folke Cronholm, the Swedish Chargé d'Affaires in Mexico. He recommended a decoration in recognition of his services.

Much more sensational, however, was the declaration made public of the correspondence carried on by Count Luxburg, the German Chargé d'Affaires at Buenos Aires, with the Foreign Office at Berlin through the Swedish legation as a medium of communication. The first of these messages made public was dated May 19, 1917. After detailing the release of certain German and Austrian ships by the Argentine government, and speaking of the change in public feeling in Argentina in behalf of the Germans, he said:

> "This government will, in the future, only clear Argentine ships as far as Las Palmas. I beg that the small steamers *Oran* and *Guazo*, thirty-first January (meaning, which sailed 31) which are now nearing Bordeaux with a view to change of flag, may be spared if possible, or else sunk without a trace being left ('spurlos versenkt'). Another message followed on July 3:
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> "I learn from a reliable source that the Acting Minister of Foreign Affairs, who is a notorious ass and anglophile, declared in a secret session of the senate, that Argentine would demand from Berlin a promise not to sink more Argentine ships. If not agreed to, relations would be broken off. I recommend refusal, and if necessary, calling in the mediation of Spain."

Other messages in the same form followed, showing that a constant communication had been carried on between Argentina and Germany through one source. The Swedish government denied any wrong intentions or acts, but a satisfactory adjustment had not been made at the end of the year. On September 21, the secretary of state made public the following message from von Bernstorff to the Berlin Foreign Office, dated January 22, 1917:

> "I request authority to pay out up to $50,000 in order, as on former occasions, to influence Congress through the organization you know of, which can perhaps prevent war. I am beginning in the meantime to act accordingly.
>
> "In the above circumstances a public official German declaration in favor of Ireland is highly desirable, in order to gain the support of Irish influence here."

The publication of this message created a profound sensation in Congress. A resolution was at once adopted to investigate as to any possible criminal plans in German activities as indicated by this note. No definite action, however, was taken.

On September 22, 1917, the secretary of state published the following:

> "In view of inquiries which have been made as to whether Count Bernstorff knew of the purpose of his government to renew relentless submarine warfare when he sent his message of January 22, 1917, asking authorization to expend $50,000, I can state that the Department of State possesses conclusive evidence that on or before January 19, Count Bernstorff had received and read the Zimmermann telegram to Minister von Eckhart in Mexico which contained the following:
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> " 'We intend to begin on the 1st of February unrestricted submarine warfare. We shall endeavor in spite of this to keep the United States of America neutral.'
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> "Count Bernstorff was, therefore, fully advised of the intentions of the Imperial government at the time when he asked for authority of Berlin to employ funds for an organization to influence Congressional action in favor of the continued neutrality of this country."

On December 21, 1917, Secretary Lansing made public another series of telegrams exchanged between Count Luxburg and the German government through the Swedish Minister. These made it plain that the German government was keeping in close touch through this channel with happenings in South American countries. It indicated also the strong desire of the German government to preserve the neutrality of this country.

One of the most daring attempts at propaganda work was carried on by a Levantine adventurer, Bolo Pasha, who came to the United States with the purpose of influencing or purchasing newspapers in behalf of German propaganda. He was supplied with a large amount of money by the German government, and large sums were deposited with a banking house of German affiliations in New York City. On his arrival in this country, Bolo entered into negotiations with Adolph Pavenstedt, then a member of the banking house Amsinck and Co. Pavenstedt carried Bolo's plans to Ambassador Bernstorff, and as a result, the German Ambassador directed Hugo Schmidt, the German financial agent in America, to pay to Bolo $1,750,000.

Bolo secured introductions to prominent men, including William Randolph Hearst, whom he convinced that he was a friend of France and was carrying on work in behalf of that country. It was afterward revealed that he was in close relations with Senator Humbert of France, who received large sums of money from the German funds supplied to Bolo. The intrigues of Bolo Pasha were revealed through an investigation carried on by Merton Lewis, the attorney-general of New York, who sent the evidence in his hands to the French government. Bolo's work was carried on not only in the United States, but in Canada, but no evidence is shown that his efforts to influence or purchase papers were successful. See FRANCE, *History*.

THE UNITED STATES IN COUNCIL. In the autumn of 1917, the United States had become sufficiently identified with the war operations, as an Ally, to make it necessary for representatives of the country to take part in the deliberations as to the proper conduct of the war. For an account of this participation see WAR OF THE NATIONS.

EMBARGO AND BLOCKADE OF GERMAN TRADE. The problem of dealing with neutral countries which bordered on Germany, and which normally obtained large food supplies from the United States, was one of the most vexing problems with which the American government had to deal. Extraordinary increase in these imports during the years of the war, made it evident that these countries were supplying immense quantities of stores to Germany, and thus prolonging the war. The president issued a proclamation declaring that after August 30, 1917, no exports from American ports could be shipped to any country in the eastern hemisphere except under a license granted by the Export Council. This restriction, so universal in application, was specifically aimed at the European neutral countries now trading with Germany. In an explanatory note accompanying the proclamation the president said:

> "The purpose and effect of this proclamation is not export prohibition, but merely export control. It is not the intention to interfere unnecessarily with our foreign trade; but our own domestic needs must be adequately safeguarded, and there is the added duty of meeting the necessities of all the nations at war with the Imperial German government.
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> "After these needs are met, it is our wish and intention to minister to the needs of the neutral nations as far as our resources permit. This task will be discharged without other than the very proper qualification that the liberation of our surplus products shall not be made the occasion of benefit to the enemy, either directly or indirectly."

The embargo was later modified by the removal of the license ban from a number of commodities for export to countries other than Germany, her allies, and neutral nations bordering on Germany. The effect of this modification was to concentrate the embargo against Holland, Sweden, Norway, and Denmark, the countries from which Germany secured large quantities of supplies. Holland had previously entered into an agreement with Germany which fixed the percentage of the exports from the Netherlands to the Central Powers, and to the nations at war with them. The United States government refused to recognize this agreement as equitable and intimated that while it was observed, no American commodities, including foods, cattle, fodder, and dairy products would be permitted to enter Holland. Holland clung to the agreement in order to obtain coal and other commodities from Germany. As a result of this embargo, a large number of Dutch and other neutral vessels loaded with grain and other food products, were held in New York harbor and elsewhere. The United States government refused to permit them to sail under conditions which enabled the cargo to take the place of food supplies from Holland to Germany. The United States proposed that these ships with the cargo be sent to the Allies or unloaded for American use, and that the vessels be placed in the American coastwise trade. The Dutch government refused, fearing the attitude that Germany would take if aid was given to her enemies. There were in all eighty-four Dutch ships held idle in American ports for six months, and they entailed expenses to their owners exceeding twenty-five million dollars. An arrangement had not yet been arrived at at the end of the year.

DECLARATION OF WAR WITH AUSTRIA. Relations between Austria and the United States by the latter part of the year had reached a delicate stage. Theoretically, the United States was not at war with Austria-Hungary, but as a matter of fact, no attempt was made to discriminate between that country and Germany, as far as actual hostilities were concerned. For an account of the relations between the two countries, from a diplomatic standpoint, see the section, *The Diplomacy of the War*, in the article WAR OF THE NATIONS.

Although no definite announcement had been made that war was to be declared with Austria-Hungary, there was no general surprise when President Wilson, in his annual address at the opening of Congress on December 3, asked Congress to declare war in the following words:

> "One very embarrassing obstacle that stands in our way is that we are at war with Germany, but not with her allies. I therefore very earnestly recommend that the Congress immediately declare the United States in a state of war with Austria-Hungary. Does it seem strange to you that this should be the conclusion of the argument I have just addressed to you? It is not. It is, in fact, the inevitable logic of what I have said. Austria-Hungary is for the time being not her own mistress, but simply the vassal of the German government. We must face the facts as they are and act upon them without sentiment in this stern business. The government of Austria-Hungary is not acting upon its own initiative or in response to the wishes and feelings of its own peoples, but as the instrument of another nation. We must meet its force with our own and regard the Central Powers as but one. The war can be successfully conducted in no other way."

Congress at once began, in accordance with the president's request, to prepare a resolution of war, and a joint resolution was passed in the Senate and the House on December 7, 1917. The president thereupon issued the following proclamation:

Whereas the Congress of the United States, in the exercise of the constitutional authority vested in them, have resolved, by joint resolution of the Senate and House of Representatives bearing date of December 7, 1917, as follows:

Whereas the Imperial and Royal Austro-Hungarian government has committed repeated acts of war against the government and the people of the United States of America: Therefore be it

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That a state of war is hereby declared to exist between the United States of America and the Imperial and Royal Austro-Hungarian government; and that the President be, and he is hereby, authorized and directed to employ the entire naval and military forces of the United States and the resources of the government to carry on war against the Imperial and Royal Austro-Hungarian government; and to bring the conflict to a successful termination all the resources of the country are hereby pledged by the Congress of the United States.

Whereas, by sections 4067, 4068, 4069, and 4070 of the Revised Statutes, provision is made relative to natives, citizens, denizens, or subjects of a hostile nation or government, being males of the age of 14 years and upwards, who shall be in the United States and not actually naturalized;

Now, therefore, I, Woodrow Wilson, President of the United States of America, do hereby proclaim to all whom it may concern that a state of war exists between the United States and the Imperial and Royal Austro-Hungarian government; and I do specially direct all officers, civil or military, of the United States that they exercise vigilance and zeal in the discharge of the duties incident to such a state of war; and I do, moreover, earnestly appeal to all American citizens that they, in loyal devotion to their country, dedicated from its foundation to the principles of liberty and justice, uphold the laws of the land and give undivided and willing support to those measures which may be adopted by the constitutional authorities in prosecuting the war to a successful issue and in obtaining a secure and just peace;

And, acting under and by virtue of the authority vested in me by the Constitution of the United States and the aforesaid sections of the Revised Statutes, I do hereby further proclaim and direct that the conduct to be observed on the part of the United States toward all natives, citizens, denizens, or subjects of Austria-Hungary, being males of the age of 14 years and upward who shall be within the United States and not actually naturalized, shall be as follows:

All natives, citizens, denizens, or subjects of Austria-Hungary, being males of 14 years and upwards, who shall be within the United States and not actually naturalized, are enjoined to preserve the peace toward the United States and to refrain from crime against the public safety, and from violating the laws of the United States and of the States and Territories thereof, and to refrain from actual hostility or giving information, aid, or comfort to the enemies of the United States, and to comply strictly with the regulations which are hereby or which may be from time to time promulgated by the president; and so long as they shall conduct themselves in accordance with law they shall be undisturbed in the peaceful pursuit of their lives and occupations, and be accorded the consideration due to all peaceful and law-abiding persons, except so far as restrictions may be necessary for their own protection and for the safety of the United States; and toward such of said persons as conduct themselves in accordance with law all citizens of the United States are enjoined to preserve the peace and to treat them with all such friendliness as may be compatible with loyalty and allegiance to the United States.

And all natives, citizens, denizens, or subjects of Austria-Hungary, being males of the age of 14 years and upward, who shall be within the United States and not actually naturalized, who fail to conduct themselves as so enjoined, in addition to all other penalties prescribed by law, shall be liable to restraint, or to give security, or to remove and depart from the United States in the manner prescribed by sections 4069 and 4070 of the Revised Statutes, and as prescribed in regulations duly promulgated by the president;

And pursuant to the authority vested in me, I hereby declare and establish the following regulations, which I find necessary in the premises and for the public safety:

(1) No native, citizen, denizen, or subject of Austria-Hungary, being a male of the age of 14 years and upwards and not actually naturalized, shall depart from the United States until he shall have received such permit as the president shall prescribe, or except under order of a court, judge, or justice, under sections 4069 and 4070 of the Revised Statutes;

(2) No such person shall land in or enter the United States, except under such restrictions and at such places as the president may prescribe;

(3) Every such person of whom there may be reasonable cause to believe that he is aiding or about to aid the enemy, or who may be at large to the danger of the public peace or safety, or who violates or attempts to violate, or of whom there is reasonable ground to believe that he is about to violate any regulation duly promulgated by the president, or any criminal law of the United States, or of the States or Territories thereof, will be subject to summary arrest by the United States marshal, or his deputy, or such other officers as the president shall designate, and to confinement in such penitentiary, prison, jail, military camp, or other place of detention as may be directed by the president.

This proclamation and the regulations herein contained shall extend and apply to all land and water, continental or insular, in any way within the jurisdiction of the United States.

In witness whereof, I have hereunto set my hand and caused the seal of the United States to be affixed.

Done in the District of Columbia this eleventh day of December, in the year of our Lord one thousand nine hundred and seventeen, and of the independence of the United States the one hundred and forty-second.

Following that, the attorney-general issued this statement:

"The proclamation issued by the president to-day, proclaims a state of war existing between this country and Austria-Hungary, and calls upon all citizens to perform their duty, warns subjects of the enemy to conform to our laws, and enjoins upon American citizens the duty of treating subjects of the enemy, who remain loyal to the United States, with all such friendliness as may be compatible with loyalty and allegiance to the United States.

"This proclamation differs from the preceding proclamation relating to the subjects of the German Empire in that, while it authorizes the arrest and internment of any subjects of the dual empire whose conduct may be a menace to the safety of the country, the only restrictions which it contains are prohibitions against either entering or leaving the United States without first obtaining permission.

"Many subjects of Austria-Hungary have already demonstrated their strong loyalty to this country by their faithfulness in industrial work, their organization of recruiting committees and in service with our armies. For the present, therefore, no restrictions will be placed upon the movements of subjects of Austria-Hungary. They are not subject to the restrictions of the previous proclamations relating to German enemy aliens; they will be permitted to reside and labor in prohibited areas and to travel freely without molestation. Only those who are dangerous or disloyal are subject to arrest."

NAVAL ENGAGEMENTS BETWEEN AMERICAN AND GERMAN VESSELS. The number of engagements reported between German and American vessels in European waters, from the time of the entrance of the American fleet into active participation in the war indicated a remarkable activity of the American naval squadrons. See NAVAL PROGRESS; WAR OF THE NATIONS, *Naval Operations;* and SUBMARINE OPERATIONS.

There were serious losses in the American merchant marine. The steamship *Campania* was sunk on August 6. The members of the armed guard of the steamship were taken prisoners by the Germans. The bark *Christiane* was sunk by a submarine in the vicinity of the Azores on August 7. The entire crew were saved and landed at Ponta Delgada. On June 27, the bark *Carmela* was sunk by a German submarine. The crew were saved and landed. The American ship *Kansan* was torpedoed on July 12. Three men were lost and the saved were landed. The American ship *Orleans*, which, with the *Rochester*, was the first vessel to sail from the United States to Europe following the issue of the war zone decree by Germany, was sunk by a submarine. Four of the crew were drowned and all the members of the armed guard were saved, and were returned to the United States. The American ship *Grace* was sunk by a torpeo on July 16. Three were killed and five were injured. In the middle of July, three American ships were captured by a German raider, the *Seeadler*, in the vicinity of the Samoan Islands. These vessels were the *A. B. Johnson*, the *Manila*, and the *Sea Swan*. The bark *Hildegard*, of New Orleans, was sunk by a submarine on July 10. Two other ships, the *Mary W. Bowen*, and the *Massapequa* were sunk about the same time. On October 19, the American steamship *Luckenbach* was engaged by an enemy submarine. The armed guard was able to keep off the submarine until the arrival of an American patrol vessel. The *Luckenbach* was hit several times, but no serious damage was done to the ship. Seven of the crew and two members of the armed guard were wounded. Another ship belonging to the same company, the *Lewis Luckenbach*, was torpedoed and sunk on October 15. All the men were saved.

RUSSIA AND THE UNITED STATES. We have already indicated the interest taken by the United States government in the affairs in Russia, under the relations and the dispatch of the mission headed by Elihu Root. The mission returned to the United States in the first week in August, and at once made a report to the president. On August 25, Secretary Lansing, for the president, sent the following communication to the Russian Ambassador in response to a note from him transmitting a commission from the Russian minister of foreign affairs:

EXCELLENCY: I have the honor to acknowledge the receipt of your note of the 3d instant in which you transcribe a communication from the minister of foreign affairs of Russia to the government of the United States.

A translation of that communication has been furnished to the president, who, in full appreciation of the vast task confronting the provisional government of Russia in the reconstruction of that country and the reorganization of its forces, and of the energy with which that government is endeavoring, in the face of disloyalty and enemy-inspired propaganda, to uphold the good faith of Russia, welcomes the assurance now given by the provisional government of Russia of its intention, of which the president has had no doubt, of being deterred by no difficulty in pursuing the war to a final triumph. No less gratifying to the president is the announcement, by that government that, like the United States, Russia consecrates all its forces and all its resources to this end. With this tenacity of purpose moving all the allied governments, there can be no doubt of the outcome of the conflict now raging.

I ask you to be so good as to give to your government renewed expression of the president's deep sympathy with them in the burden they have assumed and in the obstacles they have encountered, and are encountering, and his confidence that, inspired and impelled by their patriotic efforts and guidance, there will emerge from the present conflict a regenerated Russia founded upon those great principles of democracy, freedom and equality, right and justice.

Accept, Excellency, the renewed assurances of my highest consideration.

The president on August 26 sent the following greeting to the members of the Russian National Council, which began its session on that day:

"President of the National Council Assembly, Moscow: I take the liberty to send to the members of the great council now meeting in Moscow

the cordial greetings of their friends, the people of the United States, to express their confidence in the ultimate triumph of ideals of democracy and self-government against all enemies within and without, and to give their renewed assurance of every material and moral assistance they can extend to the government of Russia in the promotion of the common cause in which the two nations are unselfishly united."

Aspects of the war, not covered in this article, are treated in other portions of the YEAR BOOK, as indicated by the cross-references given in the text above. See also AGRICULTURAL LEGISLATION; INTERNATIONAL ARBITRATION AND PEACE; RELIEF FOR WAR VICTIMS.

UNITED STATES DEPARTMENT OF AGRICULTURE. In his annual report for 1917 the secretary of agriculture deals principally with the activities of his department relating to food supply and conservation. He outlines some of the efforts of the department and its coöperating agencies to increase the production of foods and foodstuffs even before the entrance of the United States into the war and describes the action taken to bring about more effective organization and close coördination of the agricultural forces of the nation, beginning with the conferences with official agricultural representatives of the States at St. Louis, Mo., April 9 and 10, and at Berkeley, Cal., April 13. Largely as the result of these conferences Congress formulated and passed the Food Control Act establishing the Food Administration and the Food Production Act extending the work of the Department of Agriculture. The latter act carried an appropriation of $11,346,400, mainly for promoting the enlargement of live stock production, conservation and utilization of animal products, control of animal and plant diseases and insect pests, purchase and sale of seeds, food supply surveys, marketing work, farm labor distribution, enlargement of the coöperative extension service, and increased publicity work. See AGRICULTURAL LEGISLATION; AGRICULTURAL EXTENSION WORK; AGRICULTURE.

UNITED STATES MILITARY ACADEMY (West Point, N. Y.). On July 1, 1917, the beginning of the academic year, there were 754 students and 105 instructors and administrative officers. Col. John Biddle was relieved as superintendant and commandant by Col. Samuel E. Tillman. Col. William B. Gordon, professor of natural and experimental philosophy, retired in 1917, and Lt. Col. Clifton C. Carter was appointed to succeed him. The library of the academy contains 100,000 volumes. The academy is maintained by congressional appropriation.

UNITED STATES NATIONAL MUSEUM. Various collections—historical, scientific, industrial, and artistic—belonging to the government are housed in the National Museum at Washington under the custody and supervision of the Smithsonian Institution (q.v.). Many of the explorers and investigators sent out by the institution are connected officially with the museum. During the fiscal year the building given by Charles L. Freer for his art collections was begun and by June 30, 1917, the foundations and concrete walls inclosing the sub-basement had been finished. The structure, covering 228 by 185 feet, will be of Milford granite and in design best adapted for its purpose. Mr. Freer gave $1,000,000 for the art building, besides presenting to the nation his art collection. The division of the museum which has charge of this collection is known as the National Gallery of Art.

Specimens to the number of about 200,000 were added during the year in the following departments: Anthropology; zoölogy; botany, geology and mineralogy; paleontology; textiles, woods, and other animal and vegetable products; mineral technology; and objects of art. Valuable additions were made in the field of American history. Through the field work of Dr. W. L. Abbot, of Capts. Wright and Cooper of Gen. Pershing's expedition to Mexico, and of Drs. Fewkes, Hrdlička, and O. F. Cook, valuable collections were brought to the museum. Julius Hurter, Sr., of St. Louis, made a valuable bequest of reptiles and batrachians, and Mrs. Vanderbilt, of Biltmore, N. C., presented the museum with 25,000 botanical specimens and the remnant of the botanical library saved from the flood in July, 1916. There were about 400,000 visitors to the Natural History building during the year and about 250,000 to the Arts and Industries building.

UNITED STATES NAVAL ACADEMY (Annapolis, Md.). At the beginning of the academic year there were 1455 students (midshipmen) enrolled in the academy. The corps of instructors numbered 195. The library contains 55,600 volumes.

In 1917 Congress passed special legislation to authorize an additional appointment at the Naval Academy for each member of Congress. The law authorizes also the appointment of 100 enlisted men to be selected by competitive examination of enlisted men in the navy and marine corps who have been in the service for at least one year. All other qualifications to be identical with those required of midshipmen. Superintendent, Capt. Edward W. Eberle.

UNIVERSALISTS. On the first of January, 1917, this denomination had in the United States 662 ministers, 865 churches, and 58,300 members. The Sunday schools had over 50,000 pupils. The Commission on Social Service, established in 1910, carries on social work, and, in 1917, continued the task of stimulating interest in the subject among ministers, divinity students, men's clubs, women's societies, and young people's societies. Social service information is exchanged through the church press, and social service topics are discussed at the church gatherings. The denomination carries on missionary work in Japan and China. The institutions of higher education are: Tufts College; St. Lawrence University; Buchtel College; and Lombard College.

UNIVERSITIES AND COLLEGES. STATISTICS. *Attendance.* The latest available data for attendance are for the school year 1914-15. During that year there were enrolled in universities, colleges, and technological schools, 152,307 men and 84,861 women. In the undergraduate departments of the public institutions there were 62,384 men and 29,157 women, and in the graduate departments 3473 men and 1783 women. In the private institutions there were in the undergraduate departments 79,452 men and 50,606 women. Students in engineering courses were as follows: General engineering 6166, chemical engineering 2383, electrical engineering 6637, mechanical engineering 7751, civil engineering 6637, and in mining engineering 1922.

Effect of the War on Attendance. Several of the larger institutions have issued reports of attendance during the first semester of 1917-18. The losses have been as follows: Columbia University, 15 per cent; Cornell University, 30 per cent; Harvard University, 40 per cent; Iowa State College, 20 per cent; Ohio State College, 16 per cent; Princeton University, 40 per cent; University of California, 11 per cent; University of Chicago, 19 per cent; University of Illinois, 20 per cent; University of Michigan, 20 per cent; University of Pennsylvania, 22 per cent; and Yale University, 34 per cent. The Massachusetts Institute of Technology has issued the following facts regarding the enrollment in that institution: Freshmen, as compared with last year, 104 per cent; sophomore class, 93 per cent; junior class, 75 per cent; and senior class, 86 per cent. In chemical engineering there is an increase of 12 per cent, while in architecture and mechanical engineering there are decreases of 30 and 21 per cent respectively.

Instructors. In the collegiate departments there were 17,605 men and 4048 women instructors. In the professional departments there were 7342 men and 84 women instructors.

Degrees. During the school year ending in June, 1915, there were 29,608 baccalaureate, 4140 graduate, and 833 honorary degrees conferred. Among the first degrees 11,229 were conferred in art and sciences, 2027 in agriculture, 1354 in civil engineering, 1135 in mechanical engineering, and 1063 in electrical engineering.

Finances. The universities, colleges, and technological schools reported an income of $118,299,296. Of this amount $23,603,919 were received from tuitions and other educational services, $18,246,427 from productive funds, from State or city $30,686,906, from the United States government $5,660,732, and from private benefactions $20,310,115. These institutions report property as follows: Library, scientific apparatus, machinery, and furniture, $75,197,504; grounds $86,271,597; buildings $292,698,592; and productive funds $393,366,407.

Gifts and Bequests. The aggregate of gifts and bequests, excluding grants by the United States, different States, and municipalities, reported for the school year ending June, 1915, was $29,310,124. Of this amount $5,984,635 was for increase of plant, $3,556,419 for current expenses, and $10,769,070 for endowment.

ACADEMIC FREEDOM. During 1917 instructors in several institutions were either dismissed or subjected to trial on account of conduct or expression of views which were contrary to the policy of the institutions in which they taught. Attention was particularly focused on Columbia University. During the early part of October the trustees of that institution dismissed Dr. J. McKeen Cattell from the chair of psychology which he had held since 1891 and Dr. Henry Wadsworth Dana, assistant professor of English. This action was followed by the resignation of Dr. Charles A. Beard, professor of politics, and head of the department of political science. The immediate cause of Dr. Cattell's dismissal was certain letters that he had written to members of Congress urging them to oppose the sending of conscripts to Europe. For several years Dr. Cattell had not been in complete sympathy with the government of the university. He had urged a more democratic form of organization and in various ways had undoubtedly had a disturbing influence in the faculty. Dr. Dana had been especially active for peace as a member of the People's Council. The trustees believed that the reputation of the university had been affected by the conduct and utterances of these instructors and accordingly they were dismissed. A committee of the faculty had considered these cases and it is understood were agreed that the connection of these instructors with the university should be severed. They did not, however, approve such drastic action as was taken by the trustees. Meanwhile reports had been in circulation that certain other Columbia instructors had given expression to views that were interpreted as pro-German. Dr. Beard was one of this number. A committee of the trustees considered his case and found no causes for action. Both trustees and faculty, however, were now confronted with the problem of just what freedom an instructor should have, particularly in such times as the present. Dr. Beard took exception to the attitude of the trustees and, following the dismissal of Dr. Cattell and Dr. Dana, tendered his resignation on October 8 to take effect the next morning. The letter in which he conveyed his resignation was made public. He urged his complete loyalty to the country, but expressed disapproval of the attitude of the trustees. He said: "I am convinced that while I remain in the pay of the trustees of Columbia University I cannot do effectively my humble part in sustaining public opinion in support of the just war on the German Empire or take a position of independence in the days of reconstruction that are to follow. For this reason I herewith tender my resignation as professor of politics."

The resignation of a professor who had held so prominent a position as Dr. Beard and who had been so popular with his colleagues created among a considerable number of the faculty members a feeling of unrest and dissatisfaction. The opinion was expressed that members of the teaching force should not be subject to dismissal without the approval of a committee of the faculty.

Early in 1917 the University Council, which at Columbia, next to the trustees, is its highest governing body, adopted the recommendations of a committee of nine deans and professors who were appointed to consider teaching conditions at the university. These recommendations called for the creation of a standing committee to be known as the Committee of Reference. This body was to concern itself with all matters affecting the relation of an officer of the university to his colleagues, the president, or the trustees. The Trustees' Committee on Education was requested before taking action with reference to the dismissal of any officer to confer with this body. The recommendations of the council were not approved by the trustees at that time. Later, however, the trustees adopted a joint report made by the Committee of Education and by a spcial Committee on the State of Teaching. The report recommends a Reference Committee of nine members, whose duties shall be "to consider any question that may arise as to the conduct or efficiency of any officer of administration or instructor and to report thereon to the trustees through the president." The report states that "in the whole history of Columbia University there has been no instance

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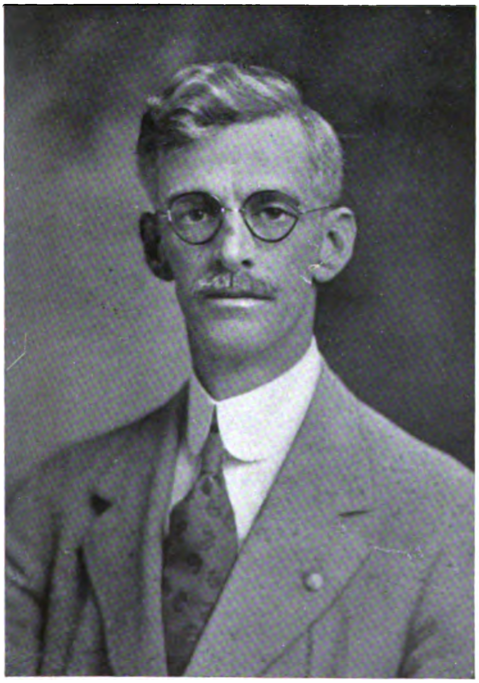
ARTHUR CUSHMAN McGIFFERT
President Union Theological Seminary

WILLIAM ALLAN NEILSON
Elected President of Smith College



ERNEST H. LINDLEY
President University of Idaho

EDWARD O. SISSON
President University of Montana

FOUR COLLEGE OR UNIVERSITY PRESIDENTS ELECTED IN 1917

where the trustees have ever subjected any teacher to restriction or discipline by reason of his classroom teaching." Appointment "presupposes that the appointee is a gentleman and a man of character; that he is competent to teach his subject or to direct research in it; that he will teach that particular subject to the best of his ability and in his teaching not deal with matters wholly unrelated to that subject; and, finally, that he will recognize his fealty to the university, and will make his duty to the university a first consideration in all his action." "This relation of confidence necessarily terminates 'when the conduct or utterances of any academic officer, either within or without the university, imperil its influence or reputation or are inconsistent with his implied pledge in accepting appointment.'" "The Joint Committee concurs with the opinion expressed by President Butler, in his annual report for 1910, that freedom implies responsibility and that academic freedom is naturally subject to the 'limitations imposed by common morality, common sense, common loyalty, and a decent respect for the opinions of mankind.'"

Much has been written in reference to the university's responsibility for the instructor's freedom, both inside and outside the classroom. President Lowell of Harvard, in his report for 1916-17, holds that the professor's classroom utterances on his own subject "ought to be absolutely free." The instructor should also be free to publish the results of research, provided they are in scholarly form. The instructor is not, however, at liberty to consider in his classroom subjects that do not relate to his specialty. President Lowell believes that it is unwise for an institution to attempt to assume responsibility for the actions and utterances of instructors outside their own classrooms. He says, "There is no middle ground. Either the university assumes full responsibility for permitting its professors to express certain opinions in public, or it assumes no responsibility whatever, and leaves them to be dealt with like other citizens by the public authorities according to the laws of the land."

President Schurman of Cornell University, in his annual report, touches upon the question of academic freedom. He says, "The year 1917-18 is likely to test severely the academic belief in and devotion to the doctrine of academic freedom of thought and speech. Perhaps no institution in the land has insisted on it more strenuously than Cornell. On that account it is especially incumbent on the Cornell community, while continuing to adhere inflexibly to their views on academic freedom, to recognize the duties and proprieties which the just assertion of this fundamental right necessarily involves especially in time of war." . . . "Abuses of academic freedom are not anticipated at Cornell, but should they unfortunately occur the policy of professorial representation on the board of trustees, which has justified itself so thoroughly by the experience of the year, is likely to enable the authorities to deal more justly and wisely with the matter than would seem to be possible in the case of universities in which the board of trustees or governing body is absolutely divorced from the faculty."

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING. The eleventh annual report of the president and treasurer of the Carnegie Foundation for the Advancement of Teaching shows that the general endowment amounts to $14,164,000. The endowment for the Division of Educational Enquiry is $1,250,000. For the year ending September 30, 1916, the trustees received an income for general purposes of $800,322.84. The income from the endowment of the Division of Educational Enquiry was $50,313.23. The expenses chargeable to General Endowment were $731,413.76. Of this amount $479,923.91 was for retiring allowances and pensions for officers and pensions in the institutions on the "Associated List," and $83,839.91 was for allowances and pensions to individuals. The expenses of the Division of Educational Enquiry were $47,992.88. During the year 30 pensions were granted to officers and teachers and 16 allowances were granted to the widows of officers and teachers. The general average of the retiring allowances of officers and teachers was $1703.59. The foundation had a total of 458 allowances in force and the annual grant for this purpose was $711,443.

THE MAYO FOUNDATION FOR MEDICAL INVESTIGATION AND RESEARCH. After a two-year trial the Board of Regents of the University of Minnesota ratified by unanimous vote the permanent agreement making the Mayo Foundation for Medical Investigation and Research the absolute property of the university. In accepting the gift the regents adopted the following resolutions:

> *Whereas*, Dr. William J. Mayo and Dr. Chas. H. Mayo, of Rochester, Minn., have given the sum of $1,650,344.79 to the University of Minnesota for the establishment of a fund to be known as the "Mayo Foundation for Medical Education and Research," and,
>
> *Whereas*, This gift has been duly accepted by unanimous action of the board of regents,
>
> *Therefore, be it Resolved*, That the board of regents records its profound sense of gratitude to the donors. The gift is unique in the annals of American education. It represents the lofty purposes of two of the most distinguished citizens of our commonwealth. They believe that this money has come from the people and that it should be returned to the people. It has been the sole aim of the donors to provide a fund which would be of permanent benefit to the State of Minnesota and to mankind as a whole. They have wisely and appropriately provided that the income of the fund shall be used for medical education and research. American universities should be encouraged in the prosecution of an educational policy which aims to develop investigators and scientists of the first rank. One clear function of a true university is to make actual contributions to various fields of knowledge. This new foundation, therefore, relates itself very intimately to the realization of our highest educational aims. Both for the gift itself and for the genuine impetus which it will impart to scholarly investigation in this university, we desire to convey to the donors our sincere appreciation.

In making this gift the Doctors Mayo have turned over their savings of a generation, also they pay the expenses of the foundation until a fund of $2,000,000 has been raised. Ten per cent of the yearly income may be used within and a like sum outside the State to investigate epidemics. After twenty-eight years the foundation may be moved to any other place within the State.

NEW PRESIDENTS. During the year 1917 the following college presidents were elected: Dr. Melvina Brannon was made president of Beloit College; Alfred Hall-Quest was elected president of Cincinnati College for Teachers; Dr. C. A. Duniway of University of Wyoming has accepted the presidency of Colorado College; Professor Benjamin T. Marshall was installed as president of the Connecticut College for Women; Drew Seminary for Women elected Clarence Paul McClelland as president; Professor Charles E. Goodell was made president of Franklin College; Dr. Frederick C. Ferry, formerly dean of Williams College, was elected president of Hamilton College; Dr. Ernest H. Lindley, professor of psychology at the University of Indiana, has been elected president of the University of Idaho; Dr. Frank L. McVey accepted the presidency of the University of Kentucky; Dr. Henry W. Tuttle was made president of Kingfisher College; Dr. Marion LeRoy Burton, president of Smith College since 1909, has been elected president of the University of Minnesota; Edward O. Sisson was made president of the University of Montana; Walter E. Clark was elected president of the University of Nevada; Ralph D. Hetzel was chosen president of New Hampshire College; Wallace Carl Riddick was installed as president of North Carolina College of Agriculture and Mechanic Arts; Dr. Edward Everett Rall was installed as president of Northwestern College; Dr. Silas Evans, president of Ripon College, has been elected president of Occidental College; Dr. Calvin G. French has been elected president of Rollins College; Dr. Lorin Stucky, professor of sociology and economics at the University of Iowa, has been elected president of Sayre College; Dr. William Allan Neilson, professor of English at Harvard, was elected president of Smith College; the Rev. Dr. Arthur Cushman McGiffert has been elected president of Union Theological Seminary; Frederick A. Hall was elected chancellor of Washington University to succeed Dr. David F. Houston. Dr. William Miller Collier succeeds Rear Admiral Charles Herbert Stockton as president of George Washington University.

Professional Schools. The schools of theology, law, medicine, dentistry, pharmacy, and veterinary medicine reported for the year ending June, 1915, buildings and grounds valued at $67,314,427. They had endowment funds amounting to $65,386,866, of which $39,232,872 were for schools of theology and $23,251,380 for schools of medicine. The total benefactions received during the year were $4,226,296. The number of students enrolled was 66,055. The corresponding enrollments in 1910 and 1905 were 67,355 and 60,322 respectively. The number of students who entered the professional schools after graduation from college was 11,521 in 1915, 9349 in 1910, and 9054 in 1905. It will be noticed that the number of college graduates who attend the professional schools has gradually increased, although the total enrollment of 1915 is less than that of 1910.

Between 1910 and 1915 the number of students decreased in the schools of theology, medicine, and pharmacy. During the same period there were increases in the schools of law and dentistry. The increases in the number of women students in law and dentistry are noteworthy. In all of the other schools the number of women students has decreased, being most pronounced in medicine.

The following table shows the number of schools of each class, the number of men and women students, the number of graduates and the per cent of students who held college degrees for the years 1915, 1910, and 1905.

Class	*Year*	*Schools*	*Students*			
			Men	*Women*	*Graduates*	*Per Cent Having Degrees*
Theology	1915	164	10,185	453	1,872	39
	1910	184	10,527	491	1,759	28
	1905	156	7,411	169	1,518	34
Law	1915	120	21,324	599	4,427	18
	1910	114	19,362	205	4,233	21
	1905	96	14,548	166	3,435	22
Medicine	1915	93	14,047	635	3,745	19
	1910	135	20,687	707	4,448	9
	1905	148	24,743	1,092	5,544	11
Dentistry	1915	50	9,452	195	2,236	2.7
	1910	53	6,346	93	1,588	3.5
	1905	54	7,049	100	2,612	2.4
Pharmacy	1915	75	5,805	302	1,838	1.3
	1910	79	5,937	289	1,715	.7
	1905	67	4,745	199	1,518	1.4

Teachers' Insurance and Annuity Association. The experience gained during the first ten years of the existence of the Carnegie Foundation for the Advancement of Teaching indicated that it was not possible or wise to continue the support and maintenance of a pension system under such rules as the trustees had previously determined. The trustees of the foundation had from the beginning retained the power of altering the rules governing pensions in such manner as experience might indicate as desirable. After communicating with the instructors in all of the institutions concerned it seemed advisable to the trustees to carry out the contracts already made with instructors, but in the future to use a part of the funds of the foundation in defraying the expenses of conducting a Teachers' Insurance and Annuity Association. In this way insurance and annuity contracts may be offered on the most favorable terms to teachers and at net cost. It is proposed to organize under the insurance laws of the State of New York. The association will have a capital of $500,000 and a surplus of $500,000. This capital and surplus will be provided through the Carnegie Foundation for the Advancement of Teaching. The by-laws of the association will provide for a policy holders' committee of five with power to make a full annual investigation of the affairs of the association. The association will issue to college teachers two kinds of policies: 1. Policies of term insurance expiring at the age of sixty-five, designed to cover the risk of death prior to the assumed age of retirement; 2. Deferred annuity policies under which the annuity payments will begin at age sixty-five. See American University Union.

UPPER AUSTRIA. A crownland of Austria. Area, 4626 square miles. Population at 1911 census, 853,006 (2.99 per cent of the Austrian total). Austrian subjects, 843,146; of these, German was the vernacular of 840,604 (99.70 per cent). Catholics formed 97.31 per cent of the population, and Evangelicals 2.48 per cent. Capital, Linz. The crownland has a diet of 69 members and is represented by 22 members in the Austrian Reichsrat.

UPPER SENEGAL AND NIGER. One of the constituent colonies of the government-general of French West Africa (q.v.).

UPSHUR, John Henry. Rear Admiral, U. S. N., retired. He was born in Northampton County, Va., on December 5, 1823, and died at Washington, D. C., on May 30, 1917. His father's name was Nottingham, but as he died very shortly after his son's birth he assumed his mother's family name. He was graduated from the United States Naval Academy in 1848, having seen service in the Mediterranean, Brazil, and Gulf of Mexico. He was present at the siege of Vera Cruz, in the Mexican war. He became a lieutenant in 1855 and had accompanied the Perry expedition to Japan. During the Civil War he served in the North and South Atlantic Squadrons, being present at the capture of Fort Hatteras, Port Royal, and Fort Fisher. Lieutenant commander in 1862; commander of flagship on the North Atlantic Squadron in 1864; commander in 1866; captain, 1872; commodore, 1880; rear admiral, 1884. After 44 years of service he was retired at his own request in 1885. He had the distinction of being the oldest retired naval officer and the oldest living graduate of the Naval Academy.

URANUS. See ASTRONOMY.

UREASE. An enzyme found in certain beans (notably the Jack bean, *Canavalia ensiformis*), fungi, and microörganisms. It is employed in determining the amount of urea in the urine, blood, and other body fluids. In the presence of water, urease converts urea into ammonium carbonate.

URUGUAY. A South American republic, bounded by Brazil and Argentina. The capital is Montevideo.

AREA AND POPULATION. The republic consists of 19 departments, whose area, as officially estimated, is 186,926 square kilometres (72,172 square miles). This area is nearly equivalent to the gross area of New York, Vermont, Massachusetts, and Connecticut (71,999 square miles). The census of October, 1908, returned a population of 1,042,686 (530,508 males, 512,178 females). Estimated population, December 31, 1915, 1,346,161; December 31, 1916, 1,378,808; increase in 1916, 32,647, of which 16,002 is excess of arrivals over departures and 16,645 excess of births over deaths. In 1915 and 1916, marriages numbered 5758 and 5889 respectively; births, 38,046 and 39,963; deaths, 16,602 and 23,318. Estimated population of Montevideo at the end of 1916, 373,964. Montevideo, whose inhabitants in 1908 numbered 291,465, had an estimated population of 373,964 at the end of 1916. Paysandú had in 1908 20,953 inhabitants; Salto, 19,788; Mercedes, 15,667. Other towns of some importance are Melo, San José, Rocha, and Fray Bentos, where is located the dried meat and extract establishment of the Liebig Company.

EDUCATION. Of the population over five years of age, about 39.8 per cent, according to the 1908 census, were illiterate. Primary instruction is nominally compulsory. In 1916, public primary schools numbered 1014, with 99,882 pupils enrolled and an average attendance of 74,184. There are about 200 private schools, with about 19,000 pupils. There are several secondary and special schools, many religious seminaries, and there is a university at Montevideo.

PRODUCTION. The cultivation of grains at present is largely confined to land along the coast and in the vicinity of rivers. In 1916, locusts and a prolonged drought (one of the worst on record) did great havoc to crops. Following are reported yields, in bushels, for the years 1914-17:

	1914-15	*1915-16*	*1916-17*
Wheat	8,595,558	9,867,277	5,390,228
Corn	11,381,686	4,603,826	......
Oats	933,231	2,283,044	1,926,258
Barley	39,588	115,402	110,308
Linseed	588,114	390,600	121,916
Canary seed...	* 1,241,000	* 2,943,200	* 1,286,600

* Pounds.

The raising of live stock constitutes the greatest source of wealth. The 1908 live stock census returned 8,192,602 cattle, 26,286,296 sheep, and 556,307 horses. Subsequent estimates surpassing these figures may be substantially correct, but undoubtedly in the last few years there has been a decline. Excessive rains in 1914 caused much disease and heavy mortality among animals. An investigation made in that year showed that between 600,000 and 700,000 cattle and more than 5,000,000 sheep died from disease and starvation. It is estimated that the drought of 1916 caused the death of 1,500,000 cattle. Estimates based on the amount of sheep dip consumed put the number of sheep in the country in 1912 at 33,000,000; January 1, 1915, 18,000,000; January 1, 1916, 13,000,000. These figures, of course, may be far from correct. However, inasmuch as all sheep are dipped and the consumption of dip per sheep is fairly regular, the total quantity of dip used should give a fairly approximate idea of the size of the flocks. It should be noted also that wool shipments from Montevideo fell from 70,411 tons in 1912 to 22,745 tons in 1916.

COMMERCE. The values of imports given in Uruguayan statistics are based not on the actual market or invoice values of merchandise, but on the value officially fixed for customs purposes. Import statistics, failing to take into account price changes, do not convey, particularly since the outbreak of the great war, a correct idea of the import trade. Official values of exports were used in statistics until 1913; since then returns have been based on market values. Imports and exports, as reported in pesos (peso = $1.03424), have been as follows:

	1913	*1914*	*1915*	*1916*
Imps. ..	48,717,307	37,234,877	34,979,639	33,802,992
Exps. ..	62,636,538	58,233,699	73,290,671	68,340,648

Details of articles of trade for 1916 are not available. In 1915, grazing and the meat industry furnished exports valued at 70,535,539 pesos; exports of meats and extracts amounted to 126,821 tons, valued at 30,333,922 pesos; wool, 37,904 tons, 20,089,178 pesos; hides and skins, 16,663,120 pesos.

In 1916, imports from and exports to the United Kingdom were valued at $7,046,889 and $13,827,770 respectively; United States, $4,325,940 and $10,672,125; France, $1,752,683 and $12,677,241; Spain, $2,443,778 and $3,049,175. For the first half of 1917, reported imports, $19,317,152, and exports, $49,274,343.

COMMUNICATIONS. The length of railway open to traffic is over 1600 miles. Only about 41 miles are state-owned. The three principal systems—the Central, the Midland, and the East Coast—comprise nearly 95 per cent of the mileage; they have been financed, built, owned, and managed by British interests. In 1917, there was under consideration a plan to extend the railway system which would involve appropriations from the government to the amount of more than $10,000,000. Telegraphs: About 2700 miles of line, with about 5400 miles of wire, and about 60 offices. Post offices, over 1000.

Finance. The legal standard of value is gold. The monetary unit is the peso, equivalent to $1.03424. The budget for the fiscal year 1916-17 showed estimated revenue of 29,086,428 pesos and estimated expenditure of 29,406,445 pesos. (For details, see 1916 Year Book.) On account of the abnormal economic situation due to the great war, a budget for 1917-18 could be only guess-work, and the estimates for 1916-17 were continued. The public debt at the end of 1915 was 147,559,589 pesos, consisting of the foreign consolidated debt of 121,077,787 pesos, the internal debt of 24,346,302 pesos, and the international debt of 2,135,500 pesos. Service of the debt in 1915, 7,776,947 pesos (including for redemptions 790,367 pesos and for railway guarantees 918,704 pesos).

Government. The legislative power is exercised by a congress of two chambers, the Senate and the House of Representatives. Senators (19 in number) are elected by indirect vote for six years; representatives (90), by direct vote for three years. The president is elected for four years by the congress and is ineligible for the next term. President for the term ending March 1, 1919, Feliciano Viera.

UTAH. Population. The population of the State in 1910 was 373,351, and on July 1, 1917, it was estimated to be 443,866.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	20,000	500,000	$850,000
	1916	13,000	429,000	493,000
Wheat	1917	320,000	5,650,000	10,057,000
	1916	326,000	6,900,000	10,488,000
Oats	1917	100,000	4,400,000	3,740,000
	1916	103,000	4,480,000	2,733,000
Potatoes ...	1917	23,000	4,347,000	3,391,000
	1916	20,000	3,600,000	4,680,000
Hay	1917	392,000	*a* 1,137,000	17,055,000
	1916	384,000	845,000	12,675,000

a Tons.

Mineral Production. The coal production was 3,567,428 net tons, valued at $5,795,944, which is the record production up to this time. This was an increase of 458,713 tons, or 15 per cent in quantity and of $879,028, or 18 per cent in value. Except for short periods of car shortage, the transportation facilities were ample for the first ten months of 1916, but in November and December the car supply was reduced, and the production was somewhat curtailed. In the latter part of the year there was a considerable shortage of labor. The consumption of Utah coal by the railroads increased, and the market on the Pacific Coast was extended largely by reason of the decrease in the water-borne fuel from Australia and Japan, and from the Atlantic Coast of the United States. The activity of the smelter and metal mines was a large factor in causing the increased output of both coal and coke.

The mining in Utah established a new record in 1917 in value. The output of gold, silver, copper, lead, and zinc had a total value of over $106,000,000, according to the estimates of the United States Geological Survey. This is an increase of nearly $17,000,000 over the record made in 1916. Gold, lead, and zinc showed decreases in output, while the output of silver and copper increased. About 15,000,000 tons of ore were mined in 1917, compared with 13,920,643 tons in 1916. The gold output decreased from $3,574,947 in 1916 to about $3,489,000 in 1917. The production of silver increased from 13,253,037 ounces in 1916 to about 14,385,000 ounces in 1917, amounting to an increase of nearly $3,000,000. The copper production of the State in 1917 broke all records, increasing from 240,275,222 pounds in 1916 to nearly 245,000,000 in 1917, an increase of nearly 2 per cent in quantity, but over $12,000,000 in value. The lead production decreased from 201,490,075 pounds in 1916 to over 193,000,000 pounds in 1917. The value increased more than $3,000,000. The recoverable zinc amounted to about 22,000,000 pounds, compared with about 29,500,000 pounds in 1916. The value decreased from $3,962,719 in 1916 to slightly more than $2,000,000 in 1917.

Transportation. The railway mileage in 1915, the latest for which statistics are available, was 2354. The railroads having the longest mileage were: The Denver and Rio Grande, 762; the Central Pacific, 273; the Oregon Short Line, 242; San Pedro, Los Angeles, and Salt Lake, 498; Western Pacific, 121; the Union Pacific, 75.

Finance. The report of the State treasurer shows the receipts for the fiscal year of 1917 to be $6,097,526. The expenditures were $6,287,635. There was a balance in the treasury at the beginning of the year amounting to $1,414,070, and at the end of the year $1,223,960. The bonded debt of the State was $411,362.

Education. The total school population in 1917 was 132,424. The total enrollment in the public schools was, in 1916, 108,359. The total expenditure for school purposes during the year was $4,701,164.

Charities and Corrections. The charitable and correctional institutions of the State include the State Industrial School, the State Mental Hospital, the State Prison, and the State School for the Deaf and Blind.

Politics and Government. On June 24, a break in the great concrete dam of the Price River Irrigation Company, in San Pete County, flooded the farm land region, and compelled the temporary abandonment of four villages. The rapid inflow of melted snow increased the pressure of the water, and a section of the core of the dam, fifty feet wide and five feet high, was carried away. It was found impossible to repair the damage, and loss of life was prevented only by sending early word to homes and farms in the path of the flood.

Legislation. Among the more important measures passed by the legislative session of 1917 are those noted below. Several important amendments were made to the laws relating to the administration of State government. A budget system for preparing and enacting annual appropriations was created. A general prohibition law becoming effective on April 2, 1917, was passed. Amendments were also made to the laws forbidding the introduction of liquor into any territory within the State. An amendment providing for constitutional prohibition was proposed. An industrial commission was created in which is centred the enforcement of various labor laws heretofore administered by independent agencies. This body also has charge of the Workingman's Compensation Law passed by the legislature. The laws relating to labor disputes were amended. Provision was made for a jury trial for a person accused of contempt of court. The child labor laws were amended in important details. Laws affecting property were also amended. A commission was appointed for the purpose of investigating the conservation and better utilization of the water resources and of controlling waters in floods. All public school houses are declared to be public centres where citizens may meet and discuss any and all subjects or questions relating to educational, economic, artistic, and other interests of the citizens.

STATE OFFICERS. Governor, Simon Bamberger; Secretary of State, Harden Bennion; Attorney-General, D. B. Shields; Treasurer, D. O. Larson; Auditor, Joseph Ririe; Superintendent of Public Instructions, E. G. Gowans—all Democrats.

JUDICIARY. Supreme Court: Chief Justice, J. E. Frick; Justices, W. M. McCarty and E. E. Corfman; (S. R. Thurman, Valentine Gideon, appointed by governor under new law). Clerk, H. W. Griffith.

UTAH, UNIVERSITY OF. A co-educational State institution at Salt Lake City, Utah. In the fall of 1917 there were 1834 students and 135 members of the faculty; 103 students and one member of the faculty left to enter government service. George Thomas, director of the Farm Loan Bank, Berkeley, Cal., was added to the department of economics. The library contained 50,215 bound volumes and 19,775 pamphlets. Productive funds in 1917 amounted to about $350,000. The university was founded in 1850. President, John A. Widtsoe, LL.D.

UULYANOFF, VLADIMIR ILYITCH. The real name of Nikolai Lenine (q.v.).

VACCINE THERAPY. During the past few years there has been a growing suspicion which has gradually become a conviction in the minds of many bacteriologists and clinicians that vaccines are not specific; that is to say, the beneficial effects observed after the injection of vaccine may be due to the reaction of the body against any foreign protein injected into the tissues, rather than to the stimulation excited by the specific toxin of the particular bacterium involved in the case. Joseph J. Miller of Chicago, in a comprehensive review of the subject, cites for example, the case of typhoid fever. He says that study of the accumulated statistics of typhoid does not point to the conclusion that the subcutaneous administration of vaccines has materially modified the course of the disease. The same may be said of colon bacillus infection, acute or chronic rheumatism, whooping-cough, bacillary dysentery, etc. Furthermore, it has not been demonstrated that the results were due to the specific character of the vaccines. Ichikawa and others, by giving typhoid vaccine intravenously, were able to terminate, usually by a single injection, about 20 per cent of their cases by crisis and about 20 per cent by rapid lysis. But these observers very early determined that the reaction was not specific, for they found that typhoid vaccine worked equally well in paratyphoid fever and that equally good results could be obtained with a colon vaccine, so long as the vaccine was given intravenously. Fraenkel treated fifty-seven typhoid patients with subcutaneous injections of killed typhoid bacilli, and reported that the disease was favorably modified; but Rumpf, his associate, used the bacillus pyocyaneus with equally favorable results in another series of cases. From the interchangeability of the bacterial proteins the transition was easy for the trial of animal and vegetable proteins. Vaughan several years ago observed that it was possible to produce a transitory immunity to the colon bacillus in animals by using peptone or egg albumin, and this immunity was apparently as lasting as that induced by injections of the colon bacillus vaccine. Ludke experimented in typhoid with a 4 per cent solution of deuteroalbumose administered intravenously. The results obtained compared favorably with those derived from typhoid vaccine, thus showing that not only were the vaccines not specific, but that similar results could be achieved by using a nonbacterial foreign protein. Still more recently, Saxl has used intramuscular injections of sterilized milk. There is also considerable evidence to show that not only foreign proteins, but other substances, will markedly influence the course of typhoid when injected into the tissues. Thus Mittlander treated 300 cases of typhoid by intravenous injection of caffein and camphor. The essential elements seem to be that there should follow a reaction of chill and temperature. Janeway cites a case of rapid termination by lysis in a typhoid patient who had a chill, following transfusion of blood for hemorrhage. Among the foremost experimenters in this department are Jobling and Petersen, who employ chiefly typhoid vaccine and proteose. In Germany, the favorite substances are sterilized milk and sodium nucleinate. Sterilized milk, normal horse serum, colon bacillus, meningococcus and gonococcus vaccines, tuberculin, collargol, and typhoid vaccine have been given in various forms of joint diseases by different observers. Kraus used colon vaccine in puerperal sepsis; Ziembowski injected milk in sepsis and tuberculosis; milk has been used by others in conjunctivitis, iritis, and trachoma; and typhoid vaccine has been used successfully in lupus and psoriasis. Staphylococcus vaccine has shown results equal to those obtained by the use of pollen in hay-fever. Miller, whose article we quote, has treated at the Cook County Hospital, Chicago, 175 cases of acute and chronic arthritides, using typhoid vaccine almost exclusively, but in a few cases proteose and chicken serum. As a rule the injections were given intravenously. Shortly after the injection there is a chill, rise in temperature to 104° or 105° F. lasting a few hours. During the violent reaction there is usually a diminution of the polymorphonuclear cells of the blood, but this is followed by a leukocytosis, which may reach 100,000 or more, but usually runs between 15,000 and 20,000. Of a series of 93 patients with acute arthritis treated, 80 were either relieved of their pain or greatly benefited after receiving from one to four injections, given daily; 6 showed moderate improvement; 7 were not benefited. In the majority of cases there was no recurrence, but a few patients had a mild return of symptoms which were abolished by another injection.

VALUATION. See RAILWAYS.

VANDERBILT UNIVERSITY. A co-educational non-sectarian institution located at Nashville, Tenn. In the fall of 1917 there were 755 students and 145 members of the faculty. Volumes in the library numbered 62,000. St. George L. Sioussat of the department of history resigned during the year to go to Brown University and Walter L. Fleming was elected head of the department. Productive funds in 1917 amounted to $3,168,000 and the income therefrom to $150,000. The campaign for the successful securing of an addition of $1,000,000 to the endowment was brought to a successful conclusion; the largest contributors to this fund being the General Education Board, Mr. W. K. Vanderbilt, and Mr. F. W. Vanderbilt. The university was founded in 1872. Chancellor, J. H. Kirkland, LL.D.

VARIABLE STARS. See ASTRONOMY.

VASSAR COLLEGE. A non-sectarian institution for the education of women, located at Poughkeepsie, N. Y. In the fall of 1917 there were 1129 students and 140 members of the faculty. Volumes in the library numbered 96,000. Productive funds in 1917 amounted to $2,330,000 and the income therefrom to $80,000. The most notable benefaction received during the year was the fiftieth anniversary fund of $1,050,000. The college was founded in 1861. President, Henry Noble McCracken, LL.D., L.H.D.

VEGETABLES. See HORTICULTURE.

VENETIA. A compartimento of Italy, occupying the northeastern part of the country. It is bounded on the north by the Austrian crownlands of Tirol and Carinthia, and on the east by the Austrian crownland of Görz and Gradisca; on the southeast it is bordered by the Gulf of Venice. Venetia consists of eight provinces, as follows: Belluno, Padova (Padua), Rovigo, Treviso, Udine, Venezia (Venice), Verona, and Vicenza. The area of the compartimento is 9478 square miles, which is almost exactly the same as the combined area of New Jersey and Delaware. The population according to the census of June 10, 1911, was 3,527,360, as compared with 3,134,467 in 1901; as estimated January 1, 1915, 3,732,941. The capital, and the capital of Venezia, is Venice, which at the beginning of 1915 had an estimated communal population of 168,038. Estimated communal population of other provincial capitals, January 1, 1915: Padua, 105,135; Verona, 86,448; Vicenza, 57,016; Udine, 49,695; Treviso, 43,597; Belluno, 22,261; Rovigo, 12.666.

VENEZUELA, UNITED STATES OF. A federal republic of northern South America. The capital is Caracas.

AREA AND POPULATION. The estimated area is 1,020,400 square kilometres (393,976 square miles), equivalent to about 13 per cent of the area of the United States. Pursuant to a convention signed at Bogotá, November 3, 1916, arbitration of the Colombian boundary has been entrusted to the president of the Swiss confederation. Estimated population, June 30, 1915, 2,816,484; June 30, 1916, 2,830,771. Caracas is supposed to have about 87,000 inhabitants; Valencia, 65,000; Maracaibo, 50,000; Barquisimeto, 35,000; Ciudad Bolívar, 22,000; San Cristóbal, 21.000; Mérida and Trujillo, each 15,000; Puerto Cabello, 14.000; La Guaira, 12,000.

EDUCATION. Elementary instruction is free and nominally compulsory, but illiteracy is prevalent. Elementary schools, public and private, number about 1500, with about 50,000 pupils enrolled. There are over 100 secondary schools and a considerable number of institutions for more advanced and professional instruction.

PRODUCTION. The leading crops commercially are coffee and cacao. Other crops of importance are corn, sugar cane, cotton, beans, peas, potatoes, and tobacco. The cotton output is consumed almost wholly in the mills of Valencia, Caracas, and Cumaná. The crops of 1915-16 were poor, but those of 1916-17, notably coffee and cacao, were among the best on record. Sugar production has been increasing rapidly; the sugar export to the United States was about 318,300 pounds in 1914, 3,043,800 pounds in 1915, and 17,276,500 pounds in 1916. Forest products include balata, rubber, chicle, tonka beans, dividivi, copaiba, vanilla, and mangrove bark. Balata production shows a decline, due to the destructive methods of gathering; balata seems destined to disappear as an important article of export. The principal minerals exploited are gold, asphalt, copper, iron, and petroleum.

COMMERCE. Imports and exports in 1916 were valued at 106,914,089 and 117.652,851 bolivars respectively, as compared with 69.793,970 and 121,266,459 in 1915. The large import increase in 1916 was due to higher prices rather than to any considerable increase in the volume of trade. Imports and exports have been as follows, in thousands of dollars:

	1911	*1912*	*1913*	*1914*	*1915*	*1916*
Imports.	18.395	20.569	18,030	13,987	13.470	20.634
Exports.	22,684	25,261	29.484	21,521	23,404	22,707

Leading imports of merchandise in 1915 and 1916 were valued as follows, in thousands of dollars: cotton cloth, 2369 and 4172; wheat flour, 1102 and 1201; drugs, medicines, and chemicals, 630 and 738; machines and machinery, 569 and 658; woolen goods, 143 and 301; cotton knit goods, 174 and 405; automobiles, 244 and 406; lard, 288 and 355; stearin, 350 and 254; leather, 220 and 320; bagging, 228 and 467; cotton (and linen) thread and yarn, 298 and 577.

The table below shows principal exports, in metric tons and thousands of bolivars:

	Metric Tons		*1,000 Bolivars*	
	1915	*1916*	*1915*	*1916*
Coffee	62,581	50,814	60,869	54,676
Cacao	18.281	15.183	25.077	22.043
Gold	....	....	6.786	9.278
Hides	3.467	3.297	8.536	8.706
Skins	940	1.162	1.704	3.203
Sugar	4.205	9.273	1.188	3.462
Balata	1.027	626	4.090	2.937
Copper ore	8,838	11,779	1.094	1.745
Frozen meat	3,571	3,313	1.402	1.670
Animals	....	....	1,417	1.516
Asphalt	25,369	44.621	1.704	1,422
Sole leather	165	510	573	904
Pearls	....	....	253	861
Rubber	140	140	728	729
Dividivi	5,668	7,758	474	684
Aigrettes	....	....	862	530
Chicle	454	74	1,147	132

In 1916 the coffee export to the United States was 25,971 metric tons, valued at 27.364,224 bolivars; France, 11,381 tons, 13.517,369 bolivars; Spain, 6149 tons, 5,555,661 bolivars. The cacao export to the United States in 1916 was 5305 tons, 8,477,333 bolivars; France, 4417 tons, 6,499,623 bolivars; Spain, 1849 tons, 2,869,662 bolivars. The following table shows trade by countries, in thousands of bolivars:

	Imports		*Exports*	
	1915	*1916*	*1915*	*1916*
United States	41,157	67,144	68,239	61,118
United Kingdom ...	14,235	23,117	3,224	2,787
Spain	8,376	5,996	5,596	10,429
France	3,391	5,145	15,430	22,418
Italy	2,512	2,175	2,713	2,419
Netherlands	4,071	1,299	10,913	3,297
Trinidad	824	873	5,329	4,074
Curaçao	14	139	5,663	8,759
Total, incl. others	69,794	106,914	121,266	117,653

COMMUNICATIONS. A large amount of traffic is carried on by water; navigable rivers total some 11,000 miles. Railway in operation in 1916, 534 miles. In August, 1917, a concession was obtained by an American company for a line from deep water to the mining properties in the Goajira peninsula. The contracts involved the construction of a port at Castilletes and a line of American standard gauge 93 miles in length with branches 3 miles in length having a one-way capacity of 10,000 tons daily. Much attention has recently been devoted to the building of wagon roads. Expenditures for this purpose were 4,100,000 bolivars in 1916, as compared with 2,400,000 in 1915 and 1,000,000 in 1914. Telegraph line, 5455 miles, with 211 offices. Post offices, 296.

FINANCE. The legal standard of value is gold. The monetary unit is the bolivar, with 19.295 cents. For the year ended June 30, 1916, reported revenue and expenditure were 65,674,385 and 57,930,228 bolivars respectively. Revenue is derived largely from customs, taxes on cigarettes, matches, and liquor, and the salt monopoly. For the year 1917-18, the budget balanced at 44,120,000 bolivars. The estimated departmental disbursements included: treasury, 14,528,829 bolivars; war and marine, 9,802,821; interior, 9,340,026; public works, 3,181,400; fomento, 3,027,270; public instruction, 2,703,991. Public debt, December 31, 1915: foreign, 111,283,078 bolivars; internal, 50,147,493; total, 161,430,571; total debt, December 31, 1916, 154,527,857 bolivars.

GOVERNMENT. The legislative power is exercised by a congress of two houses, the Senate and the Chamber of Deputies. Senators (40 in number, that is, two for each state) are elected by the state legislatures for three years. Deputies, apportioned according to population, are elected by direct vote for three years. The executive power is vested in a president (assisted by a cabinet), who is elected by the congress for seven years and is eligible for reëlection. Provisional president in 1917, Victorino Márquez Bustillos. He was elected, April 19, 1914, to succeed Gen. Juan Vicente Gómez, who had been president since 1909 and who now became commander-in-chief of the army. Gen. Gómez was elected president May 3, 1915, but retained his post as commander-in-chief, while Márquez Bustillos continued as provisional president.

VERDUN. See WAR OF THE NATIONS.

VERMONT. POPULATION. The population of the State in 1910 was 355,956, and on July 1, 1917, it was estimated to be 364,946.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Hay	1917	945,000	[a] 1,531,000	$17,606,000
	1916	980,000	1,666,000	20,992,000
Wheat	1917	3,000	66,000	142,000
	1916	1,000	25,000	41,000
Oats	1917	88,000	3,168,000	2,693,000
	1916	80,000	2,460,000	1,664,000
Potatoes ...	1917	30,000	3,000,000	4,200,000
	1916	23,000	2,576,000	3,581,000
Corn	1917	54,000	2,538,000	5,406,000
	1916	45,000	1,935,000	2,128,000
Tobacco	1917	100	[b] 165,000	45,000
	1916	100	160,000	30,000

[a] Tons. [b] Pounds.

TRANSPORTATION. The total railway mileage of the State is about 1080. There has been practically no construction of roads during the last four years.

FINANCE. The State treasurer's report on June 30, 1917, showed the total receipts to be $5,327,252. The cash on hand on July 1, 1916, was $243,994, leaving a balance on June 30, 1917, of $865,120.

EDUCATION. The total school population in the State in 1916, the latest year for which the figures are available, was 75,977. The total enrollment in 1917 was 63,962, with an average daily attendance of 49,604. There were 221 male teachers and 2991 female teachers. The average monthly salary of teachers was $41.30. The total expenditure for school purposes was $2,439,146.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the State Penitentiary at Windsor, the House of Corrections at Rutland, the Industrial School at Vergennes, the State Asylum for the Insane at Waterbury, the Soldiers' Home at Bennington, the State Sanatorium at Pittsford. There are also ten hospitals under the control of the State authorities. The State has no State board of charities.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below:

A heavier criminal punishment was placed upon the possession of military maps, plans, etc., or the furnishing of military information, or the injury of public property. The provision was made, however, that if the offense be committed under circumstances amounting to treason, the punishment shall be for this crime.

Penalties were imposed for the pollution or poisoning of the water supply of the State, and for injury to roads, bridges, public utilities, and other public property. The support of resident dependents of men who go into the national service was provided for. An accounting system in the administration of the State business was created. Permission was given the municipalities to adopt the city manager plan of government. Women taxpayers, over 21 years of age, were permitted to vote in the town meetings. An extraordinary prohibition act of 1915 was repealed. This measure was passed in 1915 for submission to the people by referendum; if approved it was to take effect in May, 1916, and if disapproved was nevertheless to take effect May 1, 1927. Amendments were made to the child labor laws. Acts were passed looking to the prevention of monopoly and unfair discrimination in the buying and selling of commodities—especially food products. The establishment of county tuberculosis hospitals was authorized.

STATE OFFICERS: Governor, Horace F. Graham; Lieutenant-Governor, Roger W. Hulburd; Secretary of State, Frederick G. Fleetwood; Treasurer, Walter F. Scott; Auditor, Benjamin Gates; Adjutant-General, Lee S. Tillotson; Attorney-General, Herbert G. Barber; Commissioner of Education, Milo G. Hillegas; Commissioner of Agriculture, Elbert S. Brigham; Commissioner of Insurance, Jos. G. Brown.

JUDICIARY. Supreme Court: Chief Justice, John H. Watson; Associate Justices, William H. Taylor, Seneca Haselton, George M. Powers, Williard W. Miles; Clerk, L. C. Moody.

VERMONT, UNIVERSITY OF. A co-educational State institution at Burlington, Vt. In the fall of 1917 there were 600 students and 115 members of the faculty; about 150 students and 8 members of the faculty were in government service in 1917. The library contained 96,960 bound volumes and 37,000 pamphlets. Productive funds in 1917 amounted to $951,048 and the income therefrom to $36,121. Total income, except for Federal funds, amounted to $213,281.55. The university maintained units of the R. O. T. C., and instruction was given to two schools of 175 and 200 each of enlisted men in the Signal Corps. The university was founded in 1791. President (absent on war service), Guy Potter Benton, LL.D.; acting president, George H. Perkins, Ph.D.

VESICULAR STOMATITIS. See VETERINARY MEDICINE.

VETERINARY MEDICINE. The veterinary profession proved its loyalty to the country by the patriotic spirit with which its members volunteered for war service. The difficult task of organizing the greater veterinary corps was successfully accomplished with the aid of leading members of the profession who were appointed as majors. Upon members of this corps dependence was placed first for the prevention of the purchase of unsound horses and mules for army service, particularly such as might be carriers of infectious diseases, and second the direct supervision of the health of all horses engaged in war service, of which in number there must be as many as one for every four soldiers.

Veterinarians were also busily engaged in the equally important work of increasing the production of foods through eliminating the loss of live stock from disease, an annual loss, as estimated by the secretary of agriculture in 1915, of not less than $212,000,000. This work was carried on in a more intensive way than ever before with Texas fever, hog cholera, tuberculosis, dourine, scabies, etc. The efficiency of the veterinary service of the English army in the great war was shown in the reduction of the wastage of horses to less than 10 per cent a year, as compared with 55 per cent in the Boer War. That their valor was not lacking was evidenced by the military crosses that many have received.

NECROLOGY. The death of Dr. A. D. Melvin, who had been the chief of the Federal Bureau of Animal Industry since 1905, when he succeeded the late Dr. D. E. Salmon, occurred at Washington, D. C., on December 7. The inauguration and conduct of the cattle tick eradication work, more than one-half of which work he lived to see completed, stands as a monument to his administration. The vacancy caused by his death was filled by the appointment of Dr. John R. Mohler, formerly pathologist and assistant chief of the bureau. The development and extension of the work of the Bureau of Animal Industry led to a reorganization and the formation of the office of hog cholera control, office of serum-virus control, tick eradication division, and tuberculosis eradication division.

ORGANIZATIONS. The annual meeting of the American Veterinary Medical Association was held at Kansas City, Mo., August 20-23, with an attendance of 1500. The officers elected for the following year were: Dr. Frederick Torrance, veterinary director-general of Canada, president; Drs. John H. Blattenberg, C. M. Haring, H. Jensen, John S. Anderson, and S. H. Ward, vice-presidents; Dr. L. A. Merillat, secretary, and Dr. F. H. Schneider, treasurer.

VETERINARY EDUCATION. The existing regulations for applicants admitted to Civil Service examinations for veterinary inspectors in the U. S. Department of Agriculture were revised and after the fall of 1917 a fourth year of study with an increased number of hours was to be required. Such regulations were formulated and published by the secretary of agriculture and became effective on March 1. All the State veterinary colleges raised the entrance requirements to high school graduation. There was a decrease from the previous year by 51 per cent in the number of students entering veterinary colleges in the fall of 1916.

VESICULAR STOMATITIS. The event of perhaps the greatest consequence in the field of live stock sanitation was the appearance among horses and cattle of a disease known as vesicular stomatitis. This was of particular importance because of its spread among horses collected for military purposes and its close resemblance to foot-and-mouth disease, an extensive outbreak of which had just been stamped out (see YEAR BOOK, 1916). This outbreak was the most extensive that had occurred in the United States, it having been especially prevalent in Nebraska, South Dakota, Colorado, and Wyoming. From the remount station in the central west it became distributed by following the channels of trade from the western markets eastward as far as the Atlantic coast, and several shipments of infected horses were made to France where the disease was promptly detected.

CATTLE TICK ERADICATION. The year 1917 was a banner one in the history of tick eradication, an area of 20,000 square miles more than in any previous year having been freed from ticks. As a result of the work, the whole State of Mississippi was tick-free at the end of the year, all that remained under quarantine having been released on December 1 as part of the 65,520 square miles of territory set free in nine States. During the year 70,754 square miles were released, making a total of 379,312 square miles since the eradication work was commenced in 1906, leaving but 349,253 square miles, or about 40,000 less than half, to be cleared. Arkansas and Louisiana, following the lead of Mississippi, passed State laws which shortly would make tick eradication compulsory in every one of their infested counties, and the legislature of Texas recognized the importance of tick eradication, though its law would not become effective for some time to come. It was estimated that in the 16 Alabama counties which eradicated the cattle tick in 1916, the value of cattle was increased $10 per head, and that for every dollar expended by the county $24 was realized. Congress appropriated $631,560 for conducting the work during the fiscal year 1917-18. Plans for eradicating the cattle tick in Australia and in Argentina were submitted by commissions appointed for the purpose.

Dourine. Eradication work carried on with this disease during the year ended June 30 under an appropriation of $75,000 resulted in its completion in Iowa and Nebraska. The work was nearing completion in North Dakota and Wyoming but considerable areas of infection still remained in Montana, South Dakota, Arizona, and New Mexico. The percentage of reaction in animals tested was 2.47, as compared with 3.1 for the preceding years.

Sheep Scab. Marked progress was made in the eradication of sheep scabies. Systematic work in Texas, commenced May 1, resulted in the release from quarantine on October 15 of 107 counties representing an aggregate area of 121,451 square miles or nearly one-half the State. During the fiscal year 9702 square miles in Colorado were released from quarantine as a result of eradication work. Outbreaks in Montana and Nevada, where the disease had not existed for several years, were traced to shipments into these States and were rapidly being brought under control.

Hog Cholera. Under the appropriation of $360,000 for the fiscal year ended June 30, 1917, intensive work for the control of hog cholera was conducted in coöperation with State officials in 295 counties in 14 States. Actual statistics taken in experimental counties and careful estimates made in adjacent counties showed that in one group of 3 counties, where the control work had been under way 4 years, the percentage of loss from hog cholera had been held down constantly to from one-fourth to two-fifths of that in the 15 surrounding counties. In another group of experimental counties the average percentage of loss as compared with that in 18 surrounding counties was reduced from approximately nine-tenths in 1913 to less than one-third in 1914 and to about one-sixteenth in 1915. A total of $413,100 was appropriated for investigation and control work with hog cholera during the year commencing July 1, 1917.

Tuberculosis. Appropriations amounting to $300,000 were made by Congress for use in inaugurating control work against this insidious disease of cattle, hogs, and poultry, which is annually responsible for the loss of live stock valued at no less than $25,000,000. As a result of the eradication work commenced in the District of Columbia in November, 1909, only 0.84 per cent of the animals reacted in 1917 to the tuberculin test, as compared with 18.87 per cent in the first year of the work. In coöperative work with the Virginia farmers and officials the Federal Bureau of Animal Industry found but 6.3 per cent of the animals tested to be tuberculous, against 18.27 per cent in 1910. Offices were opened at several points in the country and coöperative work commenced with a view to eradicating the disease from pure-bred herds and the establishment of accredited herds.

Abortion Disease. Eichhorn and Potter reported that in a large herd where they had conducted investigations abortions were frequent while new cows were being purchased and susceptible material thus added, but as the practice was discontinued and the calves born in the herd were raised the disease progressively decreased, until at the present time abortion is rare and a definite herd immunity seems to have been established.

Bacillary White Diarrhea of Chicks. In searching for an accurate method of detecting the presence of *Bacterium pullorum* that is simpler and cheaper than the agglutination test, Ward and Gallagher found the intradermal test to give encouraging results.

Epizoötic Lymphangitis. Since the war this disease had been introduced into France with horses imported from northern Africa, and had become one of the most important diseases with which the army veterinarian had to deal. French investigators found excellent results to be obtained from the intravenous injection of arsenobenzol.

Botulism and Forage Poisoning. Investigations reported by Graham of the Kentucky Experiment Station showed that *Bacillus botulinus* was probably the cause of much of the loss among horses and mules resulting from forage poisoning. Investigations under way by the Federal Bureau of Animal Industry tended to support Graham's work. A report by Dickson indicated that *B. botulinus* was also a cause of limberneck in chickens.

Bibliography. Among the new works published were the following: J. Albrechtson, trans. by H. Wehrbein, *The Sterility of Cows, Its Causes and Treatment* (Chicago); F. T. Barton, *Diseases of the Dog* (New York); C. F. Bolduan and J. Koopman, *Immune sera* (5th ed., rev., New York); W. C. Bosanquet and J. W. H. Eyre, *Serums, Vaccines, and Toxins in Treatment and Diagnosis* (3rd ed., New York, 1916); A. Carrel and G. Dehelly, trans. by H. Child, *The Treatment of Infected Wounds* (London); J. Clark, *Shoeing and Balancing the Light Harness Horse* (Buffalo, N. Y., 1916); J. F. De Vine, *Bovine Tuberculosis* (Chicago); B. F. Kaupp, *Poultry Diseases* (2nd ed., rev. and enl., Chicago); H. C. Long, *Plants Poisonous to Live Stock* (Cambridge, Eng.); L. A. Merillat, *Fistula and Poll-Evil* (Chicago); H. Miessner, trans. by A. A. Leibold, *Epizoötics and Their Control During War* (Chicago); C. Porcher and P. Godard, *Le Lait et la Fièvre Méditerranéenne* (Paris, 1916); M. R. Steffen, *Special Equine Therapy* (Chicago); E. R. Stitt, *Practical Bacteriology, Blood Work, and Animal Parasitology* (4th ed., rev. and enl., Philadelphia, 1916); K. and S. Von Ruck, *Studies in Immunization Against Tuberculosis* (New York, 1916); D. S. White, *A Text-book of the Principles and Practice of Veterinary Medicine* (Philadelphia); W. L. Williams, *Veterinary Obstetrics* (Ithaca, N. Y.); K. Winslow, *Veterinary Materia Medica and Therapeutics* (7th ed., rev., New York, 1916); *Special Report on Diseases of the Horse* and *Special Report on Diseases of Cattle* (U. S. Dept. Agr., Bur. Anim. Industry, rev. eds., 1916); *The National Formulary* (4th ed., Philadelphia, 1916); *New and Nonofficial Remedies, 1916* (Chicago, 1916).

VICTORIA. A State of the Commonwealth of Australia. It lies in the southeastern part of the continent, south of New South Wales and east of South Australia. After Tasmania, Victoria is the smallest of the Australian States; its estimated area is 87,884 square miles, which is about 3 per cent of the area of the Commonwealth and is somewhat larger than Pennsylvania and Ohio combined. Estimated population, June 30, 1916, 1,405,977, as compared with 1,430,667 at the end of 1914 and 1,315,551 at the 1911 census. These figures are exclusive of full-blooded aboriginals. The capital of Victoria is Melbourne, which is also the temporary capital of the Commonwealth; its population, including suburbs, was 684,000 at the end of 1915, as compared with 588,971 at the 1911 census. Estimated population of Ballarat at the end of 1915, 42,252; Bendigo, 37,660; Geelong, 35,285.

The legislative power is exercised by a parliament of two houses, the Legislative Council and the Legislative Assembly. The council consists of 34 members, elected for six years; the Assembly, 65 members, elected for the duration of parliament, which is limited to three years. Woman suffrage was adopted by an act of 1908. The governor in 1917 was Sir Arthur Lyulph Stanley, K. C. M. G., who was appointed in January, 1914. Premier, treasurer, and minister of labor, Sir Alexander James Peacock, K. C. M. G. See AUSTRALIA.

VICTORY LOAN. See CANADA.

VILJOEN, BENJAMIN JOHANNIS. A Boer general, died at La Mesa, N. M., January 14, 1917. He was born at Woodhouse, Eastern Cape Colony, in 1868. At 18 he went with the gold rush to the Rand, and in 1893, after three years in the employ of the Boer government, began to organize the Boer military forces, in which he became major. His capture of Dr. Jameson in 1896 broke up the Jameson raid and brought Viljoen the post of commandant of militia and special commandant of burghers around Johannesburg. During the Boer War his manner of fighting earned him the nickname of "the firebrand." He was so irreconcilable in his attitude toward the British that at last he was exiled to St. Helena. But in 1902 he was paroled, and after a visit to South Africa removed to the United States and established a colony of Boers in New Mexico. During the revolution in Mexico led by Madero he acted as military adviser to that general. He wrote: *Under the Vierleur; My Reminiscences of the Anglo-Boer War;* and *An Exiled General.*

VILMORIN, PHILIPPE LE VEQUE, DE. Head of the world-renowned French seed house, Vilmorin-Andrieux and Company, and one of the most conspicuous figures in European genetics. He was 45 years old and died on June 30, 1917. Plant breeding experiments and dog breeding tests had been carried on by M. Vilmorin for many years, and on one of his visits to this country he reported to the French government on the agricultural exhibits at the St. Louis Exposition. He organized the Fourth International Conference on Genetics, held in Paris, in 1911. He published his notes on observations on wheat; his experiments with American beet sugar; the culture of ginseng in Korea and Manchuria; and the tobaccos of commerce.

VIRGINIA. POPULATION. The population of the State in 1910 was 2,061,612, and on July 1, 1917, it was estimated to be 2,218,025.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn ...	1917	2,540,000	73,275,000	$110,581,000
	1916	2,100,000	58,800,000	54,684,000
Wheat .	1917	1,280,000	17,920,000	38,707,000
	1916	1,200,000	15,240,000	25,146,000
Oats ...	1917	225,000	5,512,000	4,630,000
	1916	250,000	2,875,000	3,701,000
Potatoes.	1917	200,000	19,800,000	24,750,000
	1916	130,000	16,900,000	23,153,000
Hay ...	1917	850,000	*a* 986,000	21,002,000
	1916	900,000	1,215,000	18,225,000
Tobacco.	1917	185,000	*b* 129,300,000	34,318,000
	1916	190,000	129,200,000	18,863,000
Cotton .	1917	45,000	*c* 16,000	2,224,000
	1916	42,000	27,000	2,631,000

a Tons. *b* Pounds. *c* Bales of 500 pounds gross weight.

MINERAL PRODUCTION. The output of coal in the State in 1916 was 9,707,474 net tons, an increase compared with 1915 of 1,584,878 tons, or 19.5 per cent in quantity, and of $2,298,490 or 29 per cent in value. The quantity of coal made into coke increased more than 967,000 tons, and shipments increased 565,406 tons. The demand for coal and coke from Virginia fields was strong throughout the year. In the last six months the demand was considerably in excess of the supply. There was a scarcity of labor practically throughout the year, and the supply of cars was inadequate from June to the end of the year. The production of coal in the State in 1915 was 8,122,596 short tons, valued at $7,962,934. The number of men employed increased from 8959 in 1915 to 9777 in 1916.

The production of iron in the State in 1916 was 440,492 gross tons, compared with 348,042 in 1915. The ore shipped from the mines in 1916 was 486,798 tons, valued at $1,000,118 compared with 334,424 tons, valued at $696,920 in 1915.

Virginia is the leading State in the production of iron pyrites. The production was 148,502 long tons in 1916, valued at $925,243.

FINANCE. The report of the State treasurer for the fiscal year 1917 showed a balance in the treasury on September 30, 1916, of $356,962. The total receipts for the fiscal year amounted to $9,208,127, and the expenditures to $9,094,126, leaving a balance on hand on September 30, 1917, of $297,256.

EDUCATION. The total school population in 1915, the latest census available, was 658,926. The total enrollment in the public schools in 1917 was 495,424, with the average daily attendance of 335,744. There were 2084 male teachers, and 11,622 female teachers. The average monthly salary of teachers was $49.14.

The total expenditure for school purposes was, during the year, $8,812,118.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include the State Penitentiary at Richmond, the State Farm at Lassister Post Office, the Central State Hospital at Petersburg, Southwestern State Hospital at Marion, the Western State Hospital at Staunton, the Virginia State Epileptic Colony and the Virginia Colony for the Feeble-Minded at Madison Heights, the Catawba Sanatorium, the Virginia School for the Deaf and Blind at Catawba, and the Virginia State School for the Colored Deaf and Blind at Newport News.

STATE OFFICERS. Governor, Westmoreland Davis; Lieutenant-Governor, B. F. Buchanan; Secretary of Commonwealth, B. O. James; Auditor, C. Lee Moore; Treasurer, G. H. Urner; Superintendent of Instruction, Harris Hart; Attorney-General, Hugh A. White; Adjutant-General, W. W. Sale; Commissioner of Agriculture, George W. Koiner; Commissioner of Insurance, Joseph Button—all Democrats.

JUDICIARY. Supreme Court of Appeals: Justices, S. G. Whittle, Joseph L. Kelly, Frederick W. Sims, Robert R. Prentis, Martin P. Burks; Clerk, H. Stewart Jones.

VIRGINIA, UNIVERSITY OF. A State institution for the education of men at Charlottesville, Va. (post office: University, Va.). In the fall of 1917 there were 752 students and 68 members of the faculty. The library contained about 90,000 volumes. Productive funds in 1917 amounted to $2,471,545 and the income therefrom to $100,939. An anonymous gift of $250,000 was announced in 1917. The university was founded in 1819. President, Edwin A. Alderman, LL.D.

VIRGIN ISLANDS. Several small islands lying to the eastward of Porto Rico. A group of these constitutes the presidency of the Virgin Islands, which is a part of the British colony of the Leeward Islands (q.v.). The other islands are American: St. Thomas, St. Croix, St. John, Vieques, and Culebra. St. Thomas, St. Croix, and St. John were formerly the Danish West Indies and were sold by Denmark to the United States in 1917 for $25,000,000; their combined area is 139 square miles, and their population, which is mostly negro, was returned as 27,086 by the 1911 census. On February 20, the United States Senate passed the bill for their purchase. The measure also provided for an investigation of the needs of the people by a committee of three. Until a final form of government has been established, the present laws and officials were continued. The president, however, is given power to appoint a governor and many minor officials. On March 3 the president approved a governing act for these islands.

VITAL STATISTICS. According to statistics recently compiled by the Metropolitan Life Insurance Co., the accident rate for the working class for the United States increased during 1916 by five per hundred thousand over that of 1915. The increase was thought to be a result of the increased activity in industry and partially due to the speeding-up processes incident to the demands of war.

A large number of deaths is caused annually in India by wild animals. During the year ending June 30, 1916, 26,385 persons died in India from snake bite, an increase of 3700 over the previous year. Over 2000 more deaths were caused by elephants, tigers, and other animals. During the past five years, elephants, tigers, and other animals have killed 9192 people in British India, and of these tigers have claimed a total of 3682. In the same period, 116,828 persons have died as the result of snake bites. In the United Provinces, one man-eating tiger in the Almora district killed ten persons out of the provincial total of twenty. In order to effect the destruction of as many wild animals and snakes as possible, the government pays bounties. The number of animals destroyed in 1915 was 25,036, including 1582 tigers, 6023 leopards, 2775 bears, and 2191 wolves. The total number of snakes killed was 184,663.

In an analysis of the figures shown in the new United States life tables based on the United States Census of 1910 and the mortality statistics for 1909, 1910, and 1911 in the original registration states, J. W. Glover (*Public Health Reports*, January 5, 1917) says that the excess of city over rural mortality should receive the attention of health authorities to determine its cause and to what extent it may be reduced. Out of 100,000 births of males in the country, 58,117 survive to the age of 60, while among the same number of city births only 43,454 survive to that age. Glover says these figures are so astounding that they deserve the utmost prominence. Recent life tables, it is said, show similar differences in England and Germany. The tables also show that the mortality rates among women are lower throughout the entire range of life than for men and that the expectation of life is much greater. A striking exception is in the case of women in rural communities. Between the ages of 20 and 40, the mortality rate for rural women is almost as great as that for men, except from 25 to 31, in which period it is actually greater. The same is true for negro women from the ages of 10 to 20.

Vital statistics of countries engaged in the greatest of all wars are of special interest. The quarterly returns of the British registrar-general for the three months ending with September have just been issued. The birth rate has shown a slight rise. It is now 21.7 per thousand of the population, as compared with 19.5, the rate in the fourth quarter of 1915, which was described as the lowest birth rate recorded in any quarter since the establishment of civil registration. The deaths registered amounted to 102,457 civilian and non-civilian. This is a rate per thousand of 11.2. Infant mortality, measured by the proportion of deaths under 1 year to registered births, was equal to 79 per thousand, being 41 per thousand below the average in the ten preceding third quarters, and equal to the lowest recorded quarterly rate, namely, that for September quarter, 1912.

In Germany in 1911 the death rate per thousand population was 16.3; in 1912, it was 14.6; in 1913, 14.0; in 1914, 16.1; in 1915, 19.7, and during the first six months of 1916 (computed by the year), 17.0. The increase occurred only in cities of 15,000 population and over, including all persons in the military service, especially the wounded. The mortality for 1916 was only 0.7 per cent greater than in 1911, certainly not a remarkable increase. The infant mortality during the first year of life was: 1911, 29.7 per cent; 1912, 24.6 per cent; 1913, 24.8 per cent; 1914, 22.7 per cent; 1915, 13.4 per cent; 1916 (first half of the year), 11.5 per cent. In other words, a continuous and steady reduction, even during the period of food restriction.

The annual report of the New York Health Department for the year 1916 shows that, despite the epidemic of poliomyelitis during the summer, the death rate was the lowest the city has ever recorded, namely, 13.89 deaths per thousand population. Among the most notable achievements to which the report calls attention was the reduction of the infant mortality rate. In 1910, out of every thousand infants born, 125 died during the first year of life; in 1915 the rate was ninety-eight. The birth records show a decrease of 3592 over the number for the preceding year. The reasons ascribed for this are the decrease in foreign immigration and the low marriage rate experienced during the previous year, this being probably due to financial depression, non-employment, etc. The year 1916 witnessed an increase in the number of deaths from violence, 4235 deaths from this cause occurring in 1916 as compared with 3819 deaths in 1915. The report states that the majority of these deaths were avoidable.

VIVIANI, René. See United States and the War.

VIX, Geneviève. See Music, *Opera*.

VOCATIONAL EDUCATION. See Education in the United States.

VOLCANOES. An outburst of Quetzaltepeque or San Salvador volcano occurred on June 7, 1917, and wrought widespread damage upon the towns and cultivations of the region. The display was preceded by heavy earthquakes which destroyed most of the buildings in the city of San Salvador southeast of the mountain, but which seem to have been rather localized. The eruption was attended by loud detonations as the gases made their way to the surface and by the emission of lava and incandescent ash in large volume. The lava and mud flows reached down the slopes far enough to engulf the towns of Nejapa, Quetzaltepeque, and Armenia, while the ash was borne by the west wind over the crest of the mountain as far as Zaragoza, laying waste the extensive sugar and coffee plantations within the area. It appeared that no further damage resulted to the city of San Salvador than was accomplished by the earthquake, but the work of the latter had been sufficiently complete. The loss of life must have been considerable, but was not enumerated in the preliminary accounts.

Note has been made previously in the Year Book of the studies emanating from the Hawaiian Volcano Observatory. The results of its investigations appear from time to time in the scientific periodicals of this country. In one of the later articles T. A. Jaggar gives an account of the Mauna Loa outbreak of May, 1916, which he attributed mainly to the accumulation of gas pressure in the conduit. The agency of gas is made the prominent factor in the activity of both Kilauea and Mauna Loa, which he considered to be connected through subterranean gas channels rather than lava siphons. The eruption was accompanied in both its early and late stages by the outflow of highly vesicular lava and of quantities of fumes. Water vapor seems to be a minor feature of the process. H. S. Washington gave an account of the Stromboli eruptive channels which he found to possess a high degree of persistence, the same vents having been in use for over 150 years. This characteristic was not peculiar to Stromboli, but applies to Kilauea and other volcanoes as well. It is interpreted as confirmatory of the gas-fluxing hypothesis developed by Daly. See Alaska.

VOLHYNIA. A government of West Russia, lying east of Poland and Galicia. The area is stated at 27,699 square miles, which is a little larger than the combined land area of New Hampshire, Vermont, Massachusetts, and Rhode Island. Population, 4,241,800, according to the estimate of January 1, 1915. More than three-fourths of the people are Little Russians, the elements of the population being White and Great Russians, Poles, Jews, and Germans. Many Germans live on lands bought from the Russian government. The conditions of peasant ownership of land are somewhat different from those obtaining in other parts of Russia. the peasants owning approximately one-half. Over half of northern Volhynia is under forest. There is considerable agricultural activity in the southern part, which is said to be capable of producing approximately 80,000,000 bushels of cereals. The capital of Volhynia is Zhitomir, which, before the great war, had an estimated population of 96,800.

VOLHYNIC FEVER. Sachs reports nine cases of this disease, often called "Five-day Fever," but deprecates both terms as not being descriptive. The disease is not confined to Volhynia, nor does it follow a five-day course. He suggests the term tibialgic fever or neuralgic fever. Topfer incriminates the louse in the transmission of the disease. He found a thick short bacillus in specimens that had bitten patients and believes the disease is similar to, but not identical with, typhus.

VOLUNTEERS OF AMERICA, The. A Christian social and philanthropic organization inaugurated in 1896 in response to requests by American citizens. It was subsequently incorporated in November, 1896, under the laws of the State of New York, is modeled after the United States army, but nevertheless possesses a thoroughly democratic form of government. Its constitution and by-laws were framed by a grand field council, which represents the minor councils of officers throughout the country annually. In 1917 the volunteers had 56 homes and benevolent institutions in the United States. The volunteer workers in the same year visited 25,549 families, gave 522,067 lodgings in their charitable institutions, and 820,072 full meals. while 1,230,175 meals were given to those who paid for them by work. The Volunteer Prison League has embraced upward of some 75,000 members since its inauguration; it has leagues in nearly thirty-seven States prisons, and over 72 per cent of those who have left the prisons are living reformed and honest lives through the aid of the Volunteer Hope Halls. In the latest undertaking, the Volunteer Hospital in New York City, in 1917 there were 1418 ambulance calls, 430 major operations, 11,713 day treatments given to patients in the medical and surgical wards, 9435 new cases treated in the dispensary, and a total treated in the hospital during the year of 38,358 cases of all kinds, surgically and medically. Besides these, 1311 cases were treated in homes by the hospital's physicians. The Fresh Air Branch of the work takes many thousands of mothers and little children away from the crowded cities in the hot season. In 1917 842,330 persons were gathered in the Volunteers' indoor services, while 2,118,196 attended the 8895 open-air services. By these services 8743 persons were led to promise that they would lead a new life. In addition to Volunteer Reading Rooms, thousands of copies of Christian literature are circulated in the State prisons, jails, soldiers' homes, hospitals, and children's homes. There are also sewing classes, hospital nursing, temporary financial relief departments, fresh-air camps, Thanksgiving and Christmas dinners. The headquarters of the Volunteers is at 34 West 28th Street, New York City. The principal officers in 1917 were: Presidents, General and Mrs. Ballington Booth; vice-president, General Edward Fielding; treasurer, Col. Walter Crafts; national secretary, Col. James Merrill.

VON BERNSTORFF, Count. See United States and the War.

VORARLBERG. An Austrian crownland. Area, 1005 square miles. Population (1910 census), 145,408. Austrian subjects, 132,908; of these, German was the vernacular of 126,723 (95.36 per cent); Italian or Ladin, 5857 (4.41). Catholics formed 98.48 per cent of the population. Capital, Bregenz, on the Lake of Constance. The crownland has a diet of 26 members and is represented by 4 members in the Austrian Reichsrat.

WAGES. See Labor; Minimum Wage; Unemployment.

WAGNER, Adolph. A German economist, died in Berlin, November 9, 1917. He was born at Erlangen, Bavaria, in 1835. After studying jurisprudence and political science at Göttingen and Heidelberg he was professor successively in the Commercial Academy at Vienna, and at Dorpat, Freiburg (from 1870), and Berlin universities. He was appointed a member of the Royal Statistical Bureau of Prussia and he was a member of the Prussian Lower House in 1882-85. Wagner was one of the founders of the Verein für Social-politik. His doctor's dissertation was a monograph on the science of banking (*Beiträge zur Lehre von den Banken*, 1857). His series of notable works on banking, taxation, and social reform was begun in 1862; but his first publication in economics proper was a revision of Rau's *Lehrbuch der politischen Oekonomie* (1875-76). In later editions the work underwent so many changes that it bore no direct relation to Rau's original work, and it was published under the title *Lehr-und Handbuch der politischen Oekonomie*, of which the *Grundlegung* was Wagner's own work (1892-94), as well as the *Finanzwissenschaft* (in four parts, 1877-1901). The *Grundlegung* and the *Finanzwissenschaft* are his best known and most important works. Besides these he wrote many books and articles on social science and practical economic problems. Wagner approached economics from the point of view of jurisprudence and statistics. In the main he followed the inductive method, although in his *Grundlegung* he tends toward the deductive methods of the theoretical branch of economics. Although sometimes classed as an economist of the historical school he rejected the view that historical and inductive studies make up the whole of fruitful economic science. In his financial work he favored the extension of state functions, which often caused him to be regarded as a Socialist. He admits, however, the defects of the pure Socialistic theory and seeks to establish the proper limits of Socialism and individualism. He resigned his chair in the University of Berlin in January, 1916. Emperor William conferred upon him the order of the Red Eagle, and he was made a life member of the Prussian House of Lords in 1910.

WALES. A division of the United Kingdom, situated west of middle England, with the Irish Sea on the north and Bristol Channel on the south. The area is 7466 square miles, which is a little smaller than the land area of New Jersey. Population (1911 census), 2,025,202. See Great Britain.

WALKER, William David. An American Protestant Episcopal bishop. He was born in New York City on June 29, 1839, and died on May 2, 1917. He graduated from Columbia in 1859 and from the General Theological Seminary in 1862. From 1883 to 1896 he was missionary bishop of North Dakota. In the latter year he was appointed bishop of western New York. In 1887 he was appointed by President Cleveland a member of the United States Board of Indian Commissioners. In 1900 Theodore Roosevelt appointed him a member to the special commission for investigating conditions among the Indians of New York State. While in the west he originated the cathedral car, by means of which it was possible to conduct church services at places that otherwise could not be reached. He served as select preacher to the University of Cambridge and received honorary degrees from Oxford, Columbia, and other universities. He wrote: *Reports to the President and Congress on the Sioux and Chippewa Tribes of Indians in North Dakota; Regulations of Wealth to Labor; God's Providence in Life.*

WALLACHIA. A former principality, now the central and western division of Rumania. It is bounded on the north by Transylvania and Moldavia, touches Hungary proper on the west, and by the Danube is separated on the west from Serbia, on the south from Bulgaria, and on the east from the Dobruja. The area is stated at 29,916 square miles, which is about equal to the land area of the State of Maine. Population, 4,712,291, according to the census of January 1, 1913. Wallachia consists of Great Wallachia (Muntenia), with an area of 20,283 square miles and 3,298,394 inhabitants; and Little Wallachia (Oltenia), constituting the southwest portion of Rumania, with 9633 square miles and 1,413,897 inhabitants. The largest city is Bucharest (Bucureshti), which was the capital of Rumania until the government fled to Jassy, in Moldavia, upon the German invasion in 1916; Bucharest fell December 6 of that year. Its population prior to the great war is stated at 345,628 (308,987 on January 6, 1917); Braila had 65,911 inhabitants; Ploieshti, 57,376; Craiova, 51,877; Buzau, 29,483; Turnu-Severin, 23,801; Giurgevo (Giurgiu), 20,929.

WAR GARDENS. See Horticulture.

WAR LOANS. See United States and the War.

WAR MEASURES IN CONGRESS. See United States and the War.

WAR OF THE NATIONS, The. The history of the war during the year 1917 is treated below under the following captions:

I. The War in Brief.
II. The Situation on January 1, 1917.
III. The Diplomacy of the War.
The United States Enters the War.
Declaration of War Against Austria-Hungary.
Additional Belligerents.
Peace Proposals.
Russian Peace Movements.

Pope Benedict's Peace Proposal.
Renewal of Russian Peace Movement.
The Allied Conference at Paris.
Definition of War Aims.
Neutral Nations.

IV. MILITARY OPERATIONS.
(1) Russian Winter Offensive (January).
(2) Complete Collapse of Rumania (January-February).
(3) Continuation of the Battle of the Somme (January-March).
(4) Mesopotamian Campaign (February-October).
(5) The German Withdrawal (March-April).
(6) The Battle of Arras (April-June).
(7) The French Offensive on the Aisne (April-November).
(8) Italian Spring Offensive (May-June).
(9) American Expeditionary Force (June—).
(10) Messines Ridge (June).
(11) Russian Summer Offensive (July).
(12) British Reverse on the Yser (July).
(13) Italian Summer Campaign (July-October).
(14) Battle of Flanders (July-December).
(15) Verdun Again (August-September).
(16) The Fall of Riga (September-October).
(17) The Great Italian Retreat (October-December).
(18) Palestine Campaign (October———).
(19) Battle of Cambrai (November-December).
(20) Allied Unity (November-December).
(21) Completion of Conquest of German East Africa (December).
(22) Complete Collapse of Russia's Armies.
(23) Macedonian Front.
(24) Estimated Participants and Casualties.

V. NAVAL OPERATIONS.
The Battles in the Gulf of Riga (October).
Minor Naval Losses and Operations.
Submarines and Commerce Raiders.

VI. AËRIAL WARFARE.

I. THE WAR IN BRIEF

On June 28, 1914, the Austrian heir-apparent, Archduke Francis Ferdinand and his wife were assassinated at Sarajevo, the capital of Bosnia. Accusing Serbia of complicity in the crime and alleging that the anti-Austrian machinations of Serbian patriots menaced the integrity of the Hapsburg Empire, Austria-Hungary on July 23, 1914, delivered an ultimatum containing demands with which the Serbian government would only partially comply. Despite the diplomatic remonstrances of other powers, Austria-Hungary refused to submit the matter to peaceful arbitration and declared war on Serbia, July 28, 1914. The Russian government, frankly sympathetic with Serbia, ordered the mobilization of the Russian army and declined to countermand the order, whereupon the German government declared what it considered to be a defensive war against Russia, August 1, 1914. Two days later Germany declared war against Russia's ally, France. Preparatory to an invasion of France, German troops had already occupied Luxemburg, August 2, and begun to invade Belgium, August 4, notwithstanding Belgian opposition. The British Government construed the German violation of Belgian neutrality as a *casus belli* and declared war against Germany, August 4. Serbia and the "Allies," or Entente Powers—Russia, France, and Great Britain—were subsequently joined by Montenegro (August 7, 1914), Japan (August 23, 1914), Italy (May 23, 1915), Portugal (March 9, 1916), Rumania (August 27, 1916), United States (April 6, 1917), Panama and Cuba (April 7, 1917), Greece (July 2, 1917), Siam (July 21, 1917), Liberia (August 4, 1917), China (August 14, 1917), and Brazil (October 26, 1917). The "Teutonic" or Central Powers—Austria-Hungary and Germany, on the other hand, while they failed to receive the support of their former ally, Italy, succeeded in enlisting the aid of Turkey ("state of war" with Russia, October 30; attacked by Great Britain and France, November 5, 1914) and Bulgaria (October 14, 1915).

From the outset the Allied navies controlled the seas, putting an end to German overseas commerce and compelling the German battleships for the most part to remain in home waters under the protection of coast defenses and mines, although the main German battle fleet ventured out to fight an indecisive battle off Jutland, May 31, 1916, and swift German battle cruisers repeatedly raided the British coast. The naval engagements in the Bight of Heligoland (August 24, 1914), off Coronel (November 1, 1914), off the Falkland Islands (December 8, 1914), near Dogger Bank (January 24, 1915), and in the Gulf of Riga (October 1917) were of secondary importance. A few daring German commerce raiders and the surprisingly effective German submarines were able to inflict considerable damage upon the Allied and neutral merchant marines, but not to break the virtual blockade by means of which Great Britain hoped to starve out her principal enemy.

The military operations may be briefly summarized as follows: (*1*) In the Franco-Belgian theatre, the gallant defense of Liége (August 4-5, 1914), the stand at Mons-Namur-Charleroi (August 21-24, 1914), and a counter-invasion of Alsace-Lorraine (August, 1914) failed to stop the onward sweep of the German armies through Belgium, Luxemburg, and Lorraine toward Paris. The high tide of the German invasion was reached in the Battle of the Marne (September 6-10, 1914), after which the German right wing fell back upon the Aisne River and extended itself northward through Picardy, Artois, and Flanders to the Belgian coast. From October, 1914, to December, 1917, the long intrenched battle line from Flanders remained almost stationary, although terrific attempts to break through were made by the Germans in Flanders (October-November, 1914), again at Ypres (April-May, 1915), in the Argonne (July, 1915), and at Verdun (February-July, 1916); as well as by the Allies at Neuve Chapelle (March 10, 1915), in the region just north of Arras (May-June, 1915), in Champagne (September-October, 1915), in Arois near Lens (September-October, 1915), in the valley of the Somme, which resulted in the evacuation of 1500 square miles of French territory (July, 1916-March, 1917), near Arras (April-June, 1917), on the Aisne (April-November, 1917), in Flanders (July-December, 1917) and at Cambrai (November-December, 1917). (2) In the East the initial Russian offensive in East Prussia was shattered by Hindenburg at Tannenberg (August 26-31, 1914); an Austro-German counter-invasion of Russian Poland was checked before Warsaw (February, 1915); the Russian armies invading Austrian Galicia attained the passes of the Carpathians early in 1915, but were completely expelled from Austrian territory by "Mackensen's Drive" (May-June); and an Austro-German invasion of Russia under the masterly direction of Hindenburg, after conquering Warsaw (August 4, 1915), Brest-Litovsk (August 25), and Vilna (September 18, 1915) was halted only by the swamps before Riga, the lakes around Dvinsk, and the Pripet marshes. The Russians returning to the attack in 1916 (June-August) recaptured the Volhynian fortresses of Lutsk and Dubno, conquered the Bukowina, and penetrated up the Dniester River in Galicia as far as Halicz. The Russian revolution brought operation of the East Front to a standstill in 1917, the only outstanding features being the unsuccessful Russian offensive (July) and the fall of Riga (September-October). (*3*) After two important Austro-Hungarian attempts to "punish Serbia" had failed (in August and December, 1914), a new Austro-German invasion of Serbia was undertaken in October, 1915, with the aid of Bulgaria, and by December 5, 1915, Serbia was completely conquered. Anglo-French forces endeavoring to succor Serbia were defeated in the battle of the Vardar (December, 1915), and driven back on their base, Saloniki, in Greek territory. Montenegro and northern Albania were overrun by Austrian and Bulgar armies (January-February, 1916); the summer of 1916, however, the Allied army of Saloniki assumed the offensive and wrested the Serbian town of Monastir from the Bulgarians (November 19), but were unable to advance very much beyond that point in 1917, owing to the complete downfall of Russia and Rumania.

(*4*) Rumania, entering the war on August 27, 1916, too rashly sent her armies to "emancipate" Transylvania, leaving the Dobruja undefended against Mackensen; the Rumanian invaders of Transylvania were thrown back by Falkenhayn; and all of Rumania, excepting a small part of Moldavia, was conquered by the Central Powers. Disclosures made by the Russian revolutionists show that Rumania was betrayed by the Germanophile Russian premier, Stürmer, who failed to send the promised army to protect Rumania's flank. (*5*) Turkish armies held the Dardanelles against Anglo-French attacks (February, 1915, to January 8, 1916); delivered futile attacks upon the Suez Canal; captured a British army under General Townshend in Mesopotamia (April 28, 1916); and expelled the Russians from Kermanshah (July 5, 1916) and Hamadan, (August 10, 1916), but were unable to defend the important Armenian cities of Erzerum (February 16, 1916), Trebizond (April 18), and Erzingan (July 25) against the Grand Duke Nicholas' advance. Assuming the offensive in 1917, the Allies took Kut-el-Amara (February 24), Bagdad (March 10), and Jerusalem (December 10). (*6*) The Italians, having painfully penetrated into the Trentino a few miles, were rudely repulsed in May, 1916; towards Trieste the Italians made slow progress and finally captured Gorizia, August 9, 1916. Striking out on the Carso and Bainsizza plateaus in the spring and summer of 1917, the Italians were making substantial progress towards Laibach and Trieste, when they were again rudely repulsed by a German-Austro force and hurled back to the Piave River (October-December, 1917). (*7*) All of the German colonies were taken: Kiaochow (in China) by the Japanese (November 6, 1914); the German island possessions in the Pacific by British and Japanese expeditions; Togoland (August, 1914), Kamerun (February, 1916), German Southwest Africa (July, 1915), and German East Africa (December, 1917) by British, Portuguese, Boer, French, and Belgian forces.

Detailed accounts of the events here summarized will be found in the YEAR BOOKS for 1914, 1915, and 1916 under WAR OF THE NATIONS, as well as in the present article. See also the cross-references given at the end of this article.

II. THE SITUATION ON JANUARY 1, 1917

At the close of the year 1916 the situation of the Entente Allies was far from encouraging. The military operations of the preceding twelve months showed a distinct balance in favor of the Teutonic Allies. The Russians, it is true, had shown remarkable powers of recuperation after the crushing defeat which they had sustained at the hands of the Germans under Mackensen and Hindenburg in 1915. Gens. Brusilov and Lechitsky began in June, 1916, a drive which lasted ten weeks and resulted in the reconquest of part of Galicia and Bukowina. In the west also the French had made an heroic and successful stand against the terrific German drive against Verdun, while the British had made substantial progress in the campaign on the Somme. The Italians, too, had made slow but steady progress in regaining the territory from which they had been driven earlier in the year by the Austrians. These Allied successes, however, were more than counterbalanced by the victories of the Teutonic Powers. Montenegro and northern Albania were occupied by the Austrians. Rumania, entering the war after two years of watchful waiting, was overwhelmed by the combined forces of the Germans, Austrians, Bulgarians, and Turks. In Mesopotamia the ill-fated British force under General Townshend had been forced to surrender. Despite these apparent advantages the problem which confronted the Teutonic Powers at the beginning of 1917 was a most serious one. Opposed to them was a group of nations possessing greater immediate and far greater ultimate resources. It was of the greatest importance for the Germans, if possible, to win a decision before these vast resources of the Entente Allies could be brought to their maximum strength. Already at the beginning of the year the British and French forces on the Western Front were sufficiently strong to make it practically impossible for the Germans to win a military decision in this region. There remained but one recourse for the Germans if they were to win a prompt success against their two chief enemies. This was the use of the submarine in the effort to starve England into submission. So important did this appear that the Germans were willing to risk the danger of bringing the United States into the war. They gambled on obtaining a decision by the submarine, even if the United States became a belligerent, basing their hopes upon their ability to force England to her knees before the resources of the United States could become effective. Events proved that the Germans had miscalculated as badly in this instance as they had at the beginning of the war when they invaded Belgium in the hope of obtaining a quick and decisive victory in France.

III. THE DIPLOMACY OF THE WAR

THE UNITED STATES ENTERS THE WAR. During the early part of the year 1917 the United States, through the president, continued its earnest efforts to bring about peace (see *Peace Proposals*). But it was evident that events were making it more and more difficult for the United States to maintain its position of neutrality. The activities of German submarines resulted in the sinking of a large number of vessels with Americans on board, some of them under circumstances which seemed to conflict with the promise made by Germany on May 5, 1916 (see UNITED STATES AND THE WAR in the NEW INTERNATIONAL YEAR BOOK for 1916). The German government attempted to justify these acts on various grounds. Some of the vessels were said to be transports, others to be sailing without lights and mistaken for warships. The irritation in the United States was increased by the activity of German agents in destroying munition factories and plotting to prevent the shipment of munitions to the Entente Allies. See UNITED STATES AND THE WAR.

The situation became acute when, on January 31, 1917, the German government declared its intention of pursuing unrestricted submarine warfare in a zone around enemy countries, and sinking, after February 1, 1917, all ships which were encountered in that zone. The notice stated that a prohibited zone had been mapped out by Germany, bordering Holland, England, and France and a portion of the Mediterranean Sea. An exception was made in favor of the United States under the following conditions: A "safety zone" consisting of a narrow lane leading to Falmouth, England, was designated, through which one American passenger vessel a week would be allowed to go, provided it carried no contraband. On February 3, the president made his historic address before a joint session of Congress declaring that he had determined to break off diplomatic relations with Germany. For the full text see UNITED STATES AND THE WAR.

The reality of the German threat soon became evident. On February 7 the British ship *California* with American passengers on board was sunk without warning and American lives were lost. A communication was received from Germany through the Swiss minister suggesting negotiations to arrange a modification of the submarine policy, but Secretary Lansing replied that no negotiations would be undertaken until Germany withdrew her blockade order. For several weeks matters remained in a most unsettled and unsatisfactory situation. There was a practical embargo of American shipping, owners refusing to send out vessels until armament was secured for them or convoys were supplied by the government. At the same time the submarine warfare continued unabated. Finally, on February 26 the president applied to Congress for authority to supply merchant vessels with defensive arms and "to employ any other instrumentalities or methods that may be necessary and adequate to protect our ships and our people in their legitimate and peaceful pursuits on the seas" (for text see UNITED STATES AND THE WAR). Congress was unwilling to confer upon the president large discretionary powers. The lower house passed a bill authorizing the president to place defensive armament on merchant vessels and making an appropriation of $100,000,000 for that purpose. It refused, however, to give him authority "to employ any other instrumentalities" to protect American ships. In the Senate the bill failed to pass, owing to a small but determined opposition, before the session of Congress ended on March 4. Aroused by the failure of Congress to meet the critical situation, the president issued a statement severely rebuking the "little group of willful men" in the Senate who had defeated the will of the overwhelming majority in both houses and he called upon the Senate to amend its rules so that such a situation could not happen again. Impressed by the wave of popular approval which greeted the president's stand, the Senate, which had been called in extra session on March 5, proceeded to amend its rules, so that a two-thirds vote of the Senators present could shut off debate and bring a measure to a vote. See UNITED STATES, *Sixty-Fifth Congress*.

The country was further aroused by the disclosure of German intrigues in Mexico. The German foreign secretary in a letter to the German minister in Mexico proposed an alliance between Germany and Mexico, in case the United States should enter the war, promising financial aid and the restoration of New Mexico, Texas, and Arizona to Mexico. Japan was also to be asked by Mexico to desert the Entente Allies and join the new alliance. See UNITED STATES AND THE WAR.

Under the circumstances the president determined to act without further legislative sanction. On March 12 he announced that armed guards would be placed on all American vessels passing through the barred zone. The continued sinking of American vessels hastened the crisis and on March 21 the president called Congress to meet in special session on April 2 "to receive a communication concerning grave matters of national policy." Before the joint session of Congress President Wilson read his remarkable war message. He reviewed the accumulated grievances of the United States against the German government, and the forebearance which we had shown under great provocation. He then stated that matters had now reached such a pass that he felt compelled to "advise that the Congress declare the recent course of the Imperial German government to be in fact nothing less than war against the government and people of the United States." The president further stated that the great war had become a struggle between the two antagonistic principles of autocracy and democracy and that the "world must be made safe for democracy." He proclaimed that "we have no selfish ends to serve. We desire no conquest, no dominion. We seek no indemnities for ourselves, no material compensation for the sacrifices we shall freely make." He asserted that "our object is to vindicate the principles of peace and justice in the life of the world as against selfish and autocratic power, and to set up among the really free and self-governed peoples of the world such a concert of purpose and of action as will henceforth ensure the observance of those principles." He insisted that we had no quarrel with the German people and that we "shall desire nothing so much as the early reëstablishment of intimate relations" with them as soon as they have repudiated their present irresponsible government. For the full text of the note see UNITED STATES AND THE WAR.

The president's address was received with the greatest enthusiasm by Congress. A joint resolution was introduced into both Houses declaring that a state of war had been thrust upon the United States by Germany. The resolution passed the Senate on April 4 by a vote of 82 to 6. The six negative votes were cast by Senators La Follette, Gronna, and Norris, Republicans, and Stone, Lane, and Vardaman, Democrats. In the House of Representatives, after a debate which lasted from 10 A. M. on April 5 to 3 A. M. April 6, the resolution passed by a vote of 373 to 50, nine not voting. The affirmative included 193 Democrats, 177 Republicans, 3 Independents; the negative included 16 Democrats, 32 Republicans, 1 Socialist, and 1 Independent. The president issued the proclamation declaring a state of war with Germany on April 6.

The entrance of the United States into the war created a profound sensation throughout the world. It aroused the greatest enthusiasm among the Entente Allies. Premier Lloyd George declared that "America had at one bound become a world power in a sense she had never been before." He praised the "courage and chivalry" which brought the American people to the defense of human rights. President Poincaré of France stated that "the great American republic" had proven faithful to its ideals and its traditions. Mr. Asquith, speaking before the House of Commons, said, "I do not use language of flattery or exaggeration when I say it is one of the most disinterested acts in history."

In this country there was neither tumult nor hysteria; everywhere there was a calm but earnest spirit of loyalty. The apprehension felt by some that there might be serious disturbances among the large number of citizens and aliens of Teutonic blood, proved to be unfounded.

The Austrian government on April 8 and the Turkish government on April 20 severed diplomatic relations with the United States.

The entrance of the United States into the war did not signify the adhesion of this country to the Entente Alliance. The traditional feeling against alliances with European powers which had always been a cardinal principle of American foreign policy was still very strong. There was also a feeling that the United States should maintain a free hand and not be bound by the various territorial agreements that had been made by the Entente Powers.

DECLARATION OF WAR AGAINST AUSTRIA-HUNGARY. As stated above Austria-Hungary severed diplomatic relations with the United States two days after the United States declared war on Germany. During the summer and fall of 1917 as the United States took an increasingly important part in the war, it became apparent that it would be impracticable for the United States to fight Germany without opposing her most important ally. Recognizing this situation President Wilson, in his message which he read to Congress on December 4, called for an immediate declaration of war against Austria-Hungary. Acting upon this suggestion Congress on December 7 declared war on Austria (see UNITED STATES AND THE WAR). This action aroused no such debate or bitter feeling in Congress as developed when war was declared against Germany. In the Senate the vote was taken after an hour's debate and was passed 74 to 0. Senator La Follette, who had temporarily left the House to prepare an amendment which he wished to propose, was not present when the vote was taken. When he returned to the chamber he stated that he had not expected that the vote would be taken so soon. He then read the amendment which he had intended to propose providing that the United States should not be bound by any prior agreements among the Entente Allies to dismember the Austro-Hungarian Empire. With that added to the war resolution, he stated that he would have supported it as a necessary war measure. After three hours of debate the House of Representatives passed the resolution by a vote of 365 to 1. The single negative vote was cast by the Socialist, Meyer London, of New York City.

ADDITIONAL BELLIGERENTS. The addition of the United States to the belligerents profoundly influenced other neutral states, especially the Central and South American republics. Some had suffered severely from the German submarine campaign and were encouraged to follow the lead of the United States in breaking with Germany. Others that had not suffered material damage were influenced by the close ties which bound them to the United States. Of the latter group were Cuba and Panama, both of which broke with Germany the day following the declaration of war by the United States, the former declaring war and the latter promising support.

Brazil severed diplomatic relations with Germany on April 10. Continued sinking of Brazilian vessels resulted in the further step by Brazil of revoking her decree of neutrality on June 28, and the seizure of all German vessels in Brazilian ports. This condition of quasi-warfare continued for several months. Finally, on October 26, the Brazilian Congress formally declared war on Germany.

Long drawn-out negotiations between Germany and Argentina were ended by a statement made by the German government on August 28 that no more Argentine vessels would be sunk without warning. The controversy was, however, almost immediately reopened, as a result of the publication by Mr. Lansing of a number of intercepted dispatches which disclosed the fact that the German Chargé d 'Affaires in Argentina, Count Luxburg, had recommended that if Argentine vessels were destroyed. it should be done "spurlos versenkt" (without a trace being left) (see UNITED STATES AND THE WAR). The Argentine authorities immediately requested Count Luxburg to leave the country and both branches of Congress voted to sever diplomatic relations with Germany. President Irigoyen, however, hesitated before taking this final step until the German government should be heard from. When the latter repudiated the action of its representative, the president refused to carry out the decree of Congress.

Of the remaining Spanish American states the following severed relations with Germany, but did not declare war: Bolivia, April 13; Guatemala, April 28; Nicaragua, May 19; Costa Rica, September 21; Peru, October 7; Uruguay, October 7; Ecuador, December 8. The republic of Liberia severed relations with Germany on May 9 and the Kingdom of Siam declared war on Germany and Austria July 21.

China severed relations with Germany March 14. As to further action leading to China's active participation in the war opinion was divided in China. The president and a majority of Parliament opposed the military party, headed by the premier, and refused to consent to the declaration of war. This led to an abortive royalist revolution (see CHINA). With the suppression of the royalist uprising, the reconstituted republican government declared war on Germany and Austria on August 14.

GREECE. For an account of the blockade and the ultimatum of the Allies, see preceding YEAR BOOK, articles, GREECE, *History*, and WAR OF THE NATIONS. On June 11, M. Jonnart, a French senator acting for the Allies, notified the Greek authorities that King Constantine must abdicate in favor of his second son, Prince Alexander. The following day King Constantine abdicated and M. Venizelos, who had headed the insurrectionary government in Greece since September, 1916, became premier. The new government immediately declared its complete adhesion to the Allied cause, and declared war on Germany and Bulgaria on July 2. See GREECE, *History*.

PEACE PROPOSALS. Throughout the year 1917 evidence accumulated that the sentiment for peace in many, if not all, of the belligerent countries was growing. Expressions of war-weariness were becoming frequent. The confident and uncompromising attitude of the leaders of both sides showed distinct evidences of change.

In the closing weeks of 1916 the German chancellor made a proposition that the belligerents should "enter forthwith into peace negotiations." This was followed by a suggestion from President Wilson that all of the belligerents state precisely the objects for which they were fighting. See NEW INTERNATIONAL YEAR BOOK for 1916.

The president's note was cordially received throughout the Central Empires, and was interpreted there as supporting their peace proposals, although the president had clearly stated that his inquiry was in no way inspired by these proposals. Among the Entente Allies the note gave rise to bitter resentment. On the other hand most of the important neutral Powers endorsed it. On December 26, 1916, the German government replied to the president's proposal and suggested "an immediate meeting of delegates of the belligerents at a neutral place," but failed to make any definite reply to the concrete questions raised by the president. The reply of the Entente Powers was sent on January 10, 1917. It was far more specific than that of the Central Powers. It defined clearly what the Allied Powers understood by the formula "restitution, reparation, and guarantees" which the British premier had proclaimed as a necessary requisite to peace. "Restitution" meant the evacuation of Belgium, Serbia, Montenegro, France, Russia, and Rumania, together with the restitution of "provinces or territories wrested in the past from the Allies by force of arms or against the will of these populations." In addition the territorial rearrangements were to be made "upon the principle of nationality," by the "liberation of Italians, of Slavs, of Rumanians, and of Tcheco-Slovaques from foreign domination" and the "enfranchisement of the populations subject to the bloody tyranny of the Turks" and also the "expulsion from Europe of the Ottoman Empire." "Reparation" meant "indemnities for damages suffered." In a supplementary note sent by the British foreign minister, Mr. Balfour, it was stated that any durable peace would require "some form of international sanction."

With these replies as a basis, President Wilson made a further effort to bring about a discussion of peace terms, when in a remarkable address delivered before the Senate on January 22, 1917, he outlined the kind of peace the United States could join in guaranteeing. He stated that it was inconceivable that the United States should play no part in the great enterprise for establishing a durable peace, and if it was to play a part, it was desirable to state frankly the conditions which this country regarded as essential to a durable peace. First it must be a "peace without victory." Further it must recognize equality of right among great and small nations; it must accept the principle that "governments derive all of their just powers from the consent of the governed"; subject peoples should be freed, citing as an example the case of Poland; "every great people" should have "direct outlet to the great highways of the sea"; "freedom of the seas" should be guaranteed; provision should be made for limitation of armaments on land and sea.

This statement gives striking evidence of the extent to which the United States had departed from its traditional policy of isolation from European affairs. The president appeared to recognize this fact and labored to show that there was no change in our traditions contemplated. He pointed out that he was simply proposing the extension of the principle of the Monroe Doctrine as the doctrine for the whole world. The Entente Allies did not receive the president's suggestions with favor, being especially opposed to his suggestion of a "peace without victory." The German government expressed general agreement with the principles stated in the note, calling attention to the necessity of granting "self-government and equality of rights" to Ireland and India, as well as to other small nations. It was stated that the annexation of Belgium "had never formed a part of Germany's intentions." It further accused the Entente Allies of responsibility for prolonging the war and stated that the Allies had spurned Germany's peace offers. The latter had determined to shorten the war by the inauguration of a campaign of ruthless submarine warfare after February 1. 1917. This statement brought about an immediate break of diplomatic relations between Germany and the United States (see above, *United States Enters the War*), and ended the efforts of the United States as a neutral to bring about peace.

RUSSIAN PEACE MOVEMENTS. The surprising and dramatic revolution in Russia in March. 1917 (see RUSSIA, *History*), profoundly affected the whole war situation. From one point of view it materially strengthened the Allied cause. The alliance of the Russian autocracy with the great democratic states of western Europe in a war which the Entente had proclaimed as a struggle between autocracy and democracy, was, to say the least, anomalous. But with the deposition of the czar and the proclamation of the Russian republic, the moral position of the Entente Allies was greatly strengthened. An incongruous element had been removed and the great war appeared far more clearly as a struggle between the principles of autocracy and democracy.

On the other hand the new Russian régime did not associate itself with all of the war aims of the Allies. The radical revolutionary government showed little sympathy with the imperialistic ambitions of the Russian autocracy, and no desire to aid similar imperialistic aims of other nations. The Russian workingmen hoped to bring about a democratic peace by appealing to the working classes in all the warring nations. Their slogan was "peace without annexations or indemnities and based upon the right of all nations to decide their own fate." See RUSSIA, *History*.

Undeterred by the failure to obtain complete acceptance of its formula the Russian provisional government continued its efforts for an early peace. The Russian Council of Workingmen's and Soldiers' Delegates issued a call in May for a congress of the International Socialists, consisting of delegates from all the warring and neutral nations, to meet at Stockholm to discuss peace terms. This move was not received with favor by the Entente Allies and the United States. The government of the United States refused to issue passports to the American delegates and similar action was taken by France and Great Britain. This action foredoomed the conference.

Germany hoped to profit by this apparent breach in the ranks of her enemies. On May 15 the German chancellor made a bid for a separate peace with Russia. This move met with no success.

High hopes were aroused in the Entente countries that the Russian revolution would cause serious internal disorders in Germany, and there is evidence that the German authorities were decidedly uneasy. They made haste to promise democratic reforms, but no immediate progress was made toward the realization of these promises, and in July a serious political crisis developed. See GERMANY, *History*.

POPE BENEDICT'S PEACE PROPOSAL. The next peace effort came from neither of the belligerent groups. In a note dated August 1, 1917, Pope Benedict XV called upon all the belligerent Powers to consider the possibilities of an early and stable peace. The Pope outlined the terms which he thought would assure "a just and lasting peace"; 1. the replacing of material force by "the moral force of right"; 2. a "simultaneous and reciprocal decrease of armaments; 3. settlement of international disputes by arbitration; 4. a guarantee of "true freedom and community of the seas"; 5. mutual renunciation of indemnities, although allowing for exceptions where "certain particular reasons" would seem to justify it; 6. evacuation and restoration of all occupied territories; 7. an examination "in a conciliatory spirit" of rival territorial claims such as those of Alsace-Lorraine and the Trentino, taking into account "the aspirations of the population." To this note President Wilson replied on August 27. He pointed out that the actions of the present German government made it impossible to enter into any negotiations with it, and called upon the German people to repudiate their "irresponsible" government. At the same time the president indicated that it was no part of the plan of the United States to join in a movement for crushing the German people. He repudiated the idea of "punitive damages, the dismemberment of empires, the establishment of selfish and exclusive economic leagues" as "inexpedient and in the end worse than futile." For full text of the note, see UNITED STATES AND THE WAR. The Entente Allies generally accepted the president's statement as embodying their views, and made no separate replies to the Pope.

Commenting upon the proposal of the Pope, Dr. Michaelis stated to the main committee of the Reichstag on August 21, that the German government was in general sympathy with the aims expressed in the note, but that a detailed reply could not be made until an agreement had been reached with Germany's allies. The chancellor repudiated the statement made by the enemies of Germany that the Pope's note had been inspired by the Central Powers. The official replies of Germany and Austria to the Pope's note were made public on September 22. Both notes expressed sympathy with the suggestion of substituting "moral power of right" for the "material power of arms." They likewise approved the limitation of armaments and the guarantee of the freedom of the seas. But upon the vital questions of restoration of conquered territory and the payment of indemnities both notes were silent.

Upon these two questions, however, the German foreign secretary in a speech before the Reichstag on October 10 threw some light. He stated that except for France's demand for Alsace-Lorraine "there is absolutely no impediment to peace, no question which could not be solved by negotiations or a settlement in such a way as to render superfluous the further sacrifices of blood." If sincere, this statement indicated a willingness on the part of Germany to meet the Entente's and the Pope's demands for a restoration of conquered territory.

RENEWAL OF RUSSIAN PEACE MOVEMENT. Failure on the part of the Russian revolutionary government under the leadership of M. Kerensky to persuade the Entente Allies to restate their war aims in conformity with the Russian peace formula, caused increasing restlessness in Russia. Time and again M. Kerensky promised the Russian people that the Allies were about to hold a conference to revise their war aims, but on each occasion the date of the conference was postponed. In despair M. Kerensky on November 1 served notice on the Allies that Russia was worn out and that the other Allies would thereafter have to shoulder the burden. While M. Kerensky added that his statement did not mean that Russia was going to withdraw from the war, nevertheless his speech aroused great concern among the Entente Powers. It probably hastened the announcement that the long deferred Allied conference would meet in the latter part of November in Paris. But the hope that the conference would satisfy the longing in

Russia for peace, by revising the war aims of the Allies in such a way as to make a general peace move possible, was not realized. Mr. Bonar Law in the House of Commons announced for the Allies that the conference would not deal with "political" matters, that is, the revision of war aims, but would concern itself simply with the discussion of more effective means of prosecuting the war. This statement caused bitter disappointment in Russia and contributed not a little to undermine the authority of M. Kerensky's government. On November 7 it was announced that the extreme radical elements in Russia, known as the Bolsheviki or Maximalists, had seized control of the government offices in Petrograd. See RUSSIA, *History*.

In the meantime the leaders of the Bolsheviki published a number of documents found among the papers in the Russian foreign office, which disclosed the arrangements which had been made among the members of the Entente in the early part of the war. There was little in the documents that had not been generally known—Russia was to acquire the Dardanelles, Constantinople, the west shore of the Bosphorus, and certain defined areas in Asia Minor. Arabia was to be placed under a separate Mussulman government. Russia agreed to allow France and England to define the western boundaries of Germany, and Russia was given a free hand to define the eastern boundaries of Germany. In return for joining the Entente, Italy was to receive the Trentino, southern Tirol, Trieste, Istria, and Dalmatia, to control the foreign relations of Albania, to obtain certain rights in Lybia, and to receive additional holdings in Africa if France and Great Britain increased their territorial possessions there. Greece was to receive part of Albania and certain Turkish territory in Asia Minor, if she would join the Allies. Leon Trotzky, the Maximalist leader, stated that his purpose in publishing these documents was to disclose to the people of all nations the plans made by "financiers and traders through their parliamentary and diplomatic agents." He warned Germany that "when the German proletariat by means of revolution secures access to their chancelleries they will find documents which will show up in no better light."

On December 6 it was announced that a ten days' truce to begin December 7 had been agreed upon between Germany, Austria-Hungary, Bulgaria, and Turkey on the one side, and Russia on the other. The following day Rumania also agreed to the truce. The Russian delegates then submitted a proposition to Germany that all of the belligerents be asked to take part in reaching an armistice on all fronts. For an account of the armistice, see RUSSIA, *History*.

Immediately after signing the armistice peace negotiations were begun at Brest-Litovsk, headquarters of the German commander in the east. The Russian delegates were reported to have submitted a series of proposals calling for the evacuation of all Russian territory occupied by German troops; autonomy for Poland, the Lithuanian and Lettish provinces, and Armenia; settlement of the question of Alsace-Lorraine by plebiscite; restoration of Belgium, Serbia, and Montenegro with indemnity for damages to be provided from an international fund; Rumania to recover all her former territory, with a grant of autonomy to Dobruja; autonomy for Trent and Trieste until a plebiscite is taken; Greece and Persia to be restored; other contested territory in the Balkans to enjoy temporary autonomy until a plebiscite is taken: return of the German colonies; neutralization of all maritime straits, including the Suez and Panama Canals, freedom of commercial navigation; prohibition of torpedoing of commercial ships by international agreement; no war indemnities and all contributions exacted since the beginning of the war to be returned; no commercial discriminations after the war; peace conditions to be settled by a peace congress composed of delegates chosen by national, representative bodies; gradual disarmament on land and sea. These proposals clearly contemplated a general peace, not simply a separate peace between Russia and the Central Powers.

On December 25 the Central Powers, speaking through Count Czernin, the Austro-Hungarian foreign minister, replied to the Russian peace proposals. He stated that the representatives of the Allied Teutonic Powers "acting upon the clearly expressed will of their governments and peoples will conclude as soon as possible a general peace." He declared that the Central Powers believed that the basic principles laid down by the Russian delegates could form the basis of such a peace. He said they shared Russian condemnation of a continuation of the war for the sake of conquest and that they were prepared to conclude peace "without forcible annexations and indemnities." He added, however, that the Russian proposals could be realized only in the event that all the belligerents obligated themselves to adhere to the terms of such a peace. Specifically answering the propositions submitted by the Russian delegation, the Austro-Hungarian foreign minister stated that "forcible annexation of territories seized during the war does not enter into the intentions of the Central Powers." They did not, moreover, intend to deprive of political independence those nations which had lost it during the war. As to the Russian proposition that all subject nationalities should have the right of self-determination of their political status, it was stated that the Central Powers did not consider that this question could be solved internationally, but that it should be solved "by each government, together with its peoples, in a manner established by the constitution." In this connection it was indicated that the protection of the rights of minorities constitutes an essential part of the right of peoples to self-definition.

On the question of indemnification for war expenditures and war damages the language was somewhat vague. Count Czernin pointed out the possibility that all belligerents might renounce such payments. In such a case he stated that every belligerent Power would have only to make indemnification for expenditures for its nationals who had been made prisoners of war, "as well as for damage done in its own territory by illegal acts of force committed against civilian nationals belonging to the enemy." The proposal of the Russian government that a special fund be provided by all the belligerents for this purpose could be considered only in the event that the other belligerents join in the peace negotiations "within a suitable period."

As to the German colonies it was stated that their return constituted an essential part of the German demands "which Germany cannot renounce under any circumstances." The application of the principle of self-determination to the German colonies could not be admitted in view of the nature of the population of these colonies. Finally in regard to the question of economic relations after the war the Central Powers expressed their complete approval of the Russian proposal that no economic restrictions should be tolerated.

While addressed directly to Russia these various propositions were obviously intended for the consideration of all of the Entente Allies and the United States. They constituted the first concrete statement of peace terms made by the Central Powers. In many respects the terms suggested are remarkable. There was in them none of that self-confident and arrogant assertiveness, of the "will to conquer," and of the determination to impose a peace upon Europe, which had characterized so many of the outgivings of the Teutonic war leaders in the earlier years of the war. It is noteworthy, too, that the Teutonic statesmen are careful to state that the proposals are made not simply by the governments but upon "the clearly expressed will of their peoples." Making all allowances, the spirit and language of these proposals indicate a striking change in the mental attitude of the Teutonic authorities.

Contrasted with the terms of the Allies as defined by President Wilson the outstanding differences are: First, that the Teutonic Powers make no offer to restore the devastated parts of Belgium and northern France; second, no reference is made by the Central Powers to the question of Alsace-Lorraine and the Trentino, and finally, the Teutonic note omits all mention of a world organization after the war.

Subsequent reports of the details of the Teutonic terms placed the situation in a quite different light. Germany agreed to withdraw her military forces from Russian territory as soon as the Russian army was completely demobilized. This arrangement was not to apply to Lithuania, Courland, and portions of Livonia and Esthonia. As the inhabitants of these regions had declared their independence of Russia. Germany proposed to retain military control in these territories indefinitely. There was to be no commercial discrimination against the subjects of either nation. The contracting parties were to grant one another, for at least twenty years, the rights of the most favored nation in questions of commerce and navigation. The administration of the mouth of the Danube River was to be entrusted to an international commission. No demands were to be made for the payment of war expenses on damages, except for damage done within the territorial limits of each state by acts contrary to international law.

These detailed proposals were so completely at variance with the reported statement of Count Czernin that they tended to confirm suspicion of the sincerity of the whole German peace move.

THE ALLIED CONFERENCE AT PARIS. The long deferred Allied Conference finally assembled in Paris on November 29. Delegates were present from Great Britain, France, Italy, the United States, and the other allied states, but none from the revolutionary government of Russia, which was then in the midst of its negotiations with Germany for an armistice. It had been forecasted that the conference would concern itself, not with the definition of peace terms, but with formulating means of more effectively conducting the war. Mr. Lloyd George sounded the keynote for the conference in a speech which he made on November 12, on his return from Italy after the disastrous Italian defeat. He stated that the many reverses which the Allies had suffered were due to "national and professional traditions, questions of prestige and susceptibilities." He further stated that "No one in particular bore the blame. The guilt was in the natural difficulty of obtaining of so many nations, of so many independent organizations, that they should amalgamate their individual particularities to act together as if they were one people." The remedy he indicated was unity of purpose and action to be obtained by the creation of a Supreme War Council composed of the prime minister and another member from each of the Allied governments, together with a permanent military representative from each. Unless such unity was obtained he asserted that he was unwilling to accept any longer "responsibility for the direction of a war condemned to disaster from lack of unity." This speech caused a great stir in England and for a time it looked as if the premier's position was threatened. President Wilson in a message sent to Col. House, the head of the American commission to the Paris Conference, endorsed fully the movement for the bringing about of unified action and control among the Powers fighting Germany.

After a brief session of three days the conference ended. No detailed statement of the plans formulated by the conference was made, but it was indicated that satisfactory agreements had been reached whereby a unified and vigorous prosecution of the war was made possible. See *Military Operations*, Allied Unity.

DEFINITION OF WAR AIMS. There was a growing feeling among many people that the Entente Allies would greatly strengthen their position if a clear statement of their war aims was made. It was felt that if the German people could be convinced that it was not the intention of the Allies to crush them or to dismember their empire, it would encourage them to oppose the autocratic régime in Germany. Furthermore a definite renunciation of imperialistic plans on the part of the Allies might placate feeling in Russia and save that nation to the Allied cause. In England these views found expression in a noteworthy speech made by Lord Lansdowne, one of the most prominent Tory leaders. He pointed out the necessity for a restatement of the Allied war aims. He stated that on both sides the peoples of the countries involved "realize that the war has already lasted too long." He indicated that the Allies had done little to encourage the democratic forces in the Central Powers and he predicted that a great stimulus would be given to the peace party in Germany if it were understood that the Allies did not desire the annihilation of Germany as a great Power, that they did not wish to impose on the German people any form of government not of their own choice, that they had no desire to deny to Germany her place among the great commercial countries of the world, that the Allies were prepared to "examine, in concert with other Powers, a group of international problems, some of them of recent origin, which are connected with the question of the freedom of the seas," and finally that the Allies were prepared to provide for the settlement of international disputes by arbitration. Lord Lansdowne's views were not generally well received in the Entente countries. On the other hand they were spoken of in Germany as a "hopeful sign."

The appeal of Lord Lansdowne was answered, in large measure, by President Wilson in his message read before Congress on December 4. The president's views were awaited with the greatest of interest not only in America, but throughout the whole civilized world. This interest was indicated by the fact that arrangements were made for the simultaneous publication of the message in all of the Allied countries. It was expected that the president would restate the war aims of the United States, particularly as the Allied Conference at Paris had disbanded without making any such statement.

Dismissing as unnecessary any further statement as to the causes of the war the president proceeded to state explicitly the purposes for which the United States was fighting. He denounced in scathing terms the German autocracy and asserted that peace could come only when this autocracy was beaten down, "when the German people have spokesmen whose word we can believe," when they make reparations for the wrongs their present rulers have done and when the enslaved people of Belgium, northern France, and the Balkans have been set free. Moreover, the control of the Germany autocracy in Austria, Bulgaria, and Turkey must be broken. At the same time the president stated that it was no part of our task nor did we desire to break up the Austrian Empire. He emphasized the point which he had made in former statements that we had no desire to crush the German people or to exclude them from the family of nations when they had organized a responsible government. He indicated that if this purpose had been made clear by the Allies at the outset many of their sad reverses would have been averted. Particularly would it have enlisted and held the sympathy and enthusiasm of the Russian people. Having restated thus the war aims of the United States he dwelt upon the necessity of pressing the war vigorously to a successful conclusion. He deprecated all talk of peace until that end was reached.

NEUTRAL NATIONS. The entrance of the United States into the war deprived the neutral powers of their most powerful advocate. So long as the United States acted as the champion of neutral rights, at least a measure of the privileges of neutrals as formerly interpreted by international law had been preserved. Particularly had Great Britain hesitated to press completely her blockade policy for fear of a possible break with the United States. But with America as a belligerent the situation was materially changed. No other neutral nation was sufficiently powerful to seriously challenge whatever policy the belligerents might choose to inaugurate. It was clear, therefore, that neutral rights would be still more narrowly restricted. Such a policy would affect most seriously the Scandinavian states and Holland, through whose territory supplies reached Germany despite the British blockade. To meet this situation, President Wilson on July 9 issued a proclamation placing under government control all exports of fuel, food, fodder, iron, and steel. Loud complaints were made by neutral countries and commissions were sent to the United States to make some satisfactory arrangements, but at the close of the year no announcement had been made of any agreement.

IV. MILITARY OPERATIONS

(1) *Russian Winter Offensive* (*January*)

During the first week in January, the Russians began an offensive on the northern end of their battle line (southwest of Riga), in order to relieve the pressure on the Carpathian and Transylvanian fronts. It was practically a repetition of the unsuccessful offensive of the previous winter under Gen. Kuropatkin. The battle area of the new offensive consisted of the swampy land extending east as far as Riga, south to Mitau, and west to Tukkum. It is traversed by the Aa River, which flows into Babit Lake. The Russians attacked along the Dwina in the neighborhood of Dvinsk and had for their ultimate objective Mitau, on the Mitau-Riga-Libau Railroad. On January 10 the Russians advanced more than a mile and captured German fortified positions between the Tirul swamp and the Aa River. In heavy fighting in the Babit Lake region they took several thousand prisoners and over thirty guns. Their attacks were aimed chiefly at the village of Kalnzem, which is the nearest village to Mitau. Their advances were abruptly halted when the Germans began a counter-offensive on both banks of the Aa on January 25, which resulted in the capture of 2000 prisoners and the retirement of the Russians to their original lines. Germany followed this success up with strong attacks on the Dwina front, in Volhynia, and East Galicia, with the result that the entire Russian movement collapsed.

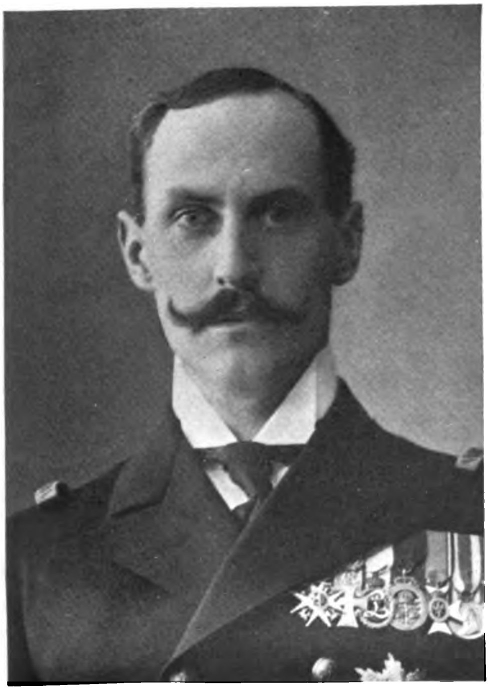
(2) *Complete Collapse of Rumania* (*January-February*)

When the year 1916 closed, all of Wallachia had been occupied by the Teutonic forces and the Rumanians were strongly defending Moldavia on a line southwest of Fokchany and Braila. In the Dobruja the Russo-Rumanian army under Gen. Sakharov was gradually being forced back toward the lower stretches of the Sereth River, but was fighting a strong defensive battle on the narrow tongue of land in the loops of the Danube east of Braila and Galatz.

During the latter part of December, 1916, the Teutonic forces crossed the Buzeu River and found the Slavic allies defending the line of the Rimnicu River. This was a small stream almost paralleling the Buzeu and possessing little defensive value. It took a week of bitter fighting, however, before the Germans were able to dislodge the Russians. The capture of Rymniku-Saratu marked the fall of this line and compelled the Russians and Rumanians to retire further toward the line of the Sereth. This retirement was pivoted on the Danube positions south of Braila. The Teutons then struck north of Rymniku-Saratu and on January 8 the important city of Fokchany was captured. A new defensive line was formed on the upper reaches of the Putna River, but it was only held for a few days when the Russians were compelled to retire to the north bank of the Sereth, near its confluence with the Putna.

DR. FELIX CALONDER
President of the Swiss Republic

GUSTAF V.
King of Sweden



HAAKON VII.
King of Norway

Photo by Paul Thompson

CHRISTIAN X.
King of Denmark

RULERS OF FOUR NEUTRAL STATES IN 1917

The complete conquest of Wallachia and the Dobruja, with the forced retirement of the Russo-Rumanian centre and right wing, put their left wing in a precarious position. It was exposed to an enfilading fire from three sides. On the rear and one flank it was under the fire of the German batteries on the eastern bank of the Danube. In the front it faced the German trenches. This critical situation compelled a retirement toward Galatz. The Matchin bridgehead fell on January 3 and on the fifth the important city of Braila was captured. Vadeni was taken on the fourteenth, but was retaken by a counter assault on the seventeenth. This town is only six miles from Galatz, but is on the southern bank of the Sereth.

In the meantime the battle on the Moldavian front had been increasing in bitterness, inasmuch as the Russo-Rumanian resistance was stiffening, accompanied by spasmodic attempts at offensive warfare in the Kasino River section. This offensive was unsuccessful, as were others attempted in the Suchitza and Trotus River valleys. These rivers are small rapid streams flowing into the Sereth from the west. Another Russian offensive (January 28) on the Kimpolung-Jacobeni road broke through the German lines on a two-mile front, but the positions were regained by the Germans by the middle of February. Snow and inclement weather held up further German advances. On February 15, their line ran roughly as follows: West of the Togyes and Gyimes passes, east of the Carpathians as far as the region west of Firgo Okna, east of Oitoz Pass to the Putna, along that river to the east of Fokchany to the Sereth, along the Sereth to Braila, and then across the Danube into the Dobruja.

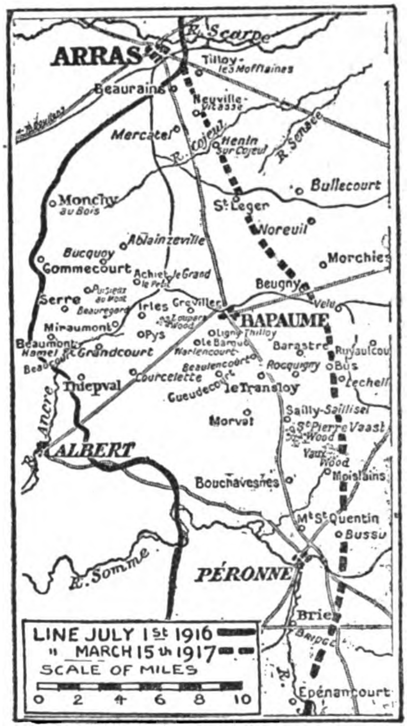
This line practically marks the high tide of the German conquest of Rumania. It was almost impossible for the Austrians to bring men and supplies across the wooded Carpathians. The Russian revolution also caused the Germans to halt operations, possibly with the idea of making peace with revolutionary Russia. The only operations of any moment on the entire Rumanian front after February were locally successful diversions after the breakdown of the Russian offensive under Brusilov in July. Force of circumstances compelled Rumania to enter the Russian and German armistice signed in December, 1917.

Military experts had severely criticized Rumania for rushing into Transylvania immediately after the declaration of war and thus leaving her flank open to attack. A partial explanation of this serious blunder was given to the world after the Russian revolution. It seems that Stürmer, the Germanophile premier of Russia, had promised to send a Russian army of 1,000,000 men, fully equipped, to protect the exposed flank. He purposely withheld this army until it was too late and the fate of Rumania had been sealed. See Rumania, *History*.

(3) *Continuation of the Battle of the Somme* (*January-March*)

The winter months of 1916-17 were a period of busy activity behind the British and French lines on the Somme battlefield. The British had gradually extended their line in this sector so that by February it reached to a point opposite Roye. Their line was now 110 miles long and included practically the entire Somme front, which was a very sorry spectacle. Trenches had been destroyed, roads torn up, and almost every square foot of terrain was pit-marked with shell holes. The British directed their energies during the months of inactivity in building new trenches, repairing old ones, repairing railways, roads, and other means of communication, and in bringing up their artillery to suitable locations for the renewal of the drive, from where it had ceased in November, 1916.

When it was possible to continue hostilities (January, 1917), the British began to carry out a number of local engagements to drive the Germans from the remainder of the Beaumont Hamel Spur in the Ancre River region. On January 11, 1500 yards of trenches along the top of the spur, east and northeast of Beaumont Hamel, were taken. By the end of the month all the high ground north and east of Beaumont was taken and the British had pushed across the Beaucourt valley and had gained a footing on the spur to the east.



From Current History Magazine, New York Times Co.

Scene of Battles in the Valley of the Ancre

The possession of the high ground gave the British artillery domination of the entire Beaucourt valley and the western slopes of the spur beyond from Grandcourt to Serre. The plan of attack was now to clear the valley and push on to the crest of the spur beyond, which formed a part of the Germans' original second line system north of the Ancre. On the night of February 3-4 the British captured German positions on a front of approximately three-quarters of a mile. This success was marked by extremely bitter counter assaults, but brought the British line level with the centre of Grandcourt and seriously threatened the German hold on that village and their other lines south of the Ancre. Consequently, on February 5, British patrols discovered that the German lines between Stuff Redoubt and Grandcourt had been evacuated. The next day the British entered Grandcourt, which had also been abandoned.

On February 10 the British seized positions lying at the foot of Serre hill (other side of Ancre from Grandcourt), and held them against strong counter attacks delivered on their new positions in the next two days. As a result of two attacks delivered north and south of the Ancre on February 17-18, the British gained important high ground which gave them complete command of the German artillery positions in the upper Ancre and the defenses of Pys and Miraumont. The possession of the latter village would seriously threaten the village of Serre, which formed the tip of a narrow salient. Again the possession of Serre would threaten the defenses of Puisieux-au-Mont and Gommecourt, and thus possibly compel the necessity for a further German withdrawal.

On February 24, it was discovered that the German positions before Pys, Miraumont, and Serre had been abandoned. They were immediately occupied by British troops. On the twenty-fifth the German first system of defenses from north of Gueudecourt to west of Serre were taken by the British. They were found to be defended by machine gun units placed in selected strategic points and by artillery stationed several miles in the rear. The British losses as a result were exceedingly light.

The Germans retired to a strong secondary defence which ran from a point in the Le Transloy-Loupart line due west of the village of Beaulencourt, crossed in front of Ligny-Thilloy and Le Barque to the southern defenses of Loupart wood. Between February 25 and March 2, this entire line was taken along with the villages of Le Barque, Ligny-Thilloy, and Thilloy. Operations on the north side of the Ancre resulted in the abandonment by the Germans of Gommecourt (February 27) and Puisieux-au-Mont (February 28).

The Germans were now forced back to the Le Transloy-Loupart line with the exception of Irles, which was the tip of a salient hooked up to the main line at Loupart wood and Achiet-le-Petit by a series of well constructed and fortified trenches. After a week's preparation, which was spent mostly in bringing up guns and ammunition, and in repairing roads, Irles was assaulted on March 10 and its whole system of defenses occupied. This prepared the way for a direct attack on the Le Transloy-Loupart line. It was heavily bombarded on March 11, and as a result of the bombardment was abandoned during the night of March 12-13. Grévillers and Loupart wood were occupied by the British, thus bringing Bapaume, one of the main objectives of the great battle of the Somme, within effective artillery range.

(4) *Mesopotamian Campaign (February-October)*

We have found (New International Year Book for 1916) that as a result of the fighting in 1916, the Allies had been absolutely unsuccessful in the fighting in Armenia, Persia, Kurdistan, and Mesopotamia. While the Russians had wrested old Armenia (just south of the Black Sea) from the Turks, the latter had resisted all efforts to get control of the Bagdad route. They had defeated three Russian expeditions and one British expedition which had this object in view. The British operation had ended in disaster by the capture of Gen. Townshend's expeditionary force at Kut-el-Amara on April 30, 1916. Throughout the remainder of that year the relief expeditionary force under Gen. Aylmer had, with difficulty, held positions in the neighborhood of the town. The British Staff prepared minute plans for the retrieving of Gen. Townshend's disaster and was ready to put them into operation in the early part of 1917. The size of the army was increased and boatloads of supplies and equipment were rushed up the Tigris River to ensure the new movement of a fair degree of success.

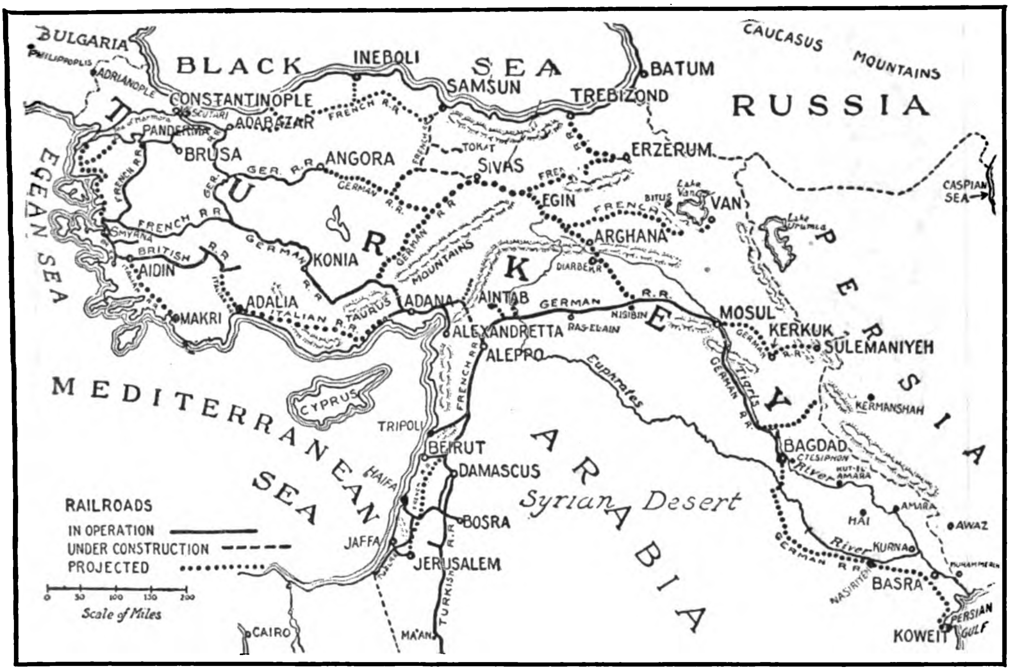
In February the weather conditions were favorable to the renewal of fighting. The transport system was in first-class working order and several river monitors had been sent up the Tigris to aid the army in its offensive. Owing to the comparative lull on the other fronts during the winter, the Mesopotamian campaign became the chief object of interest in the war.

As a result of a series of local engagements and manœuvring for position, the British, by the middle of February, had established their lines on both banks of the Tigris, where it formed a bend west of Kut-el-Amara, and, consequently, hemmed the Turks in this town. The operations were in charge of Gen. Sir Stanley Maude, who, unfortunately for the British, died later in the year. The British plan as stated by Gen. Maude were as follows: First, to secure possession of the Hai River; secondly, to clear the Turkish trench systems still remaining on the right bank of the Tigris; thirdly, to sap the enemy's strength by constant attacks, and give him no rest; fourthly, to compel him to give up the Sanna-i-yat position, or in default of that to extend his attenuated forces more and more to counter our strokes against his communications; and, lastly, to cross the Tigris at the weakest part of his line as far west as possible, and so sever his communications. The object of this offensive campaign was to counteract the threatened Turkish stroke on India through Persia.

It took Gen. Maude two months to clear the right bank of the Tigris, very bitter and severe fighting occurring in the Dahra bend of the river. On February 23, in the face of heavy fire he ferried some of his troops across the Tigris, under the protection of the artillery and machine gun fire. These secured a firm hold on the opposite bank and thus permitted the construction of a pontoon bridge. On the next day part of Shamrun peninsula and Sanna-i-yat, the keys to Kut-el-Amara, were taken. The Turks believed these positions to be impregnable, and made gallant though costly efforts to retain them. The fall of these important positions compelled the Turks to abandon Kut-el-Amara and retreat up the river toward Baghels, twenty-four miles away. The British by a forced march attempted to intercept them, but the Turks, throwing away all accoutrements, moved too rapidly and escaped envelopment.

British cavalry pursued the fleeing Turks on their right, the infantry their centre, and the

Royal Navy gunboats on the Tigris, their left. These latter wrought considerable havoc on the Turks by getting ahead of them and firing on them as they approached. They totally destroyed the Turkish boats on the river and recaptured the monitors which had been lost with the surrender of Gen. Townshend's army. The pursuit was broken off at Aziziyeh, fifty miles from Kut, to enable the British to reorganize their extended lines of communications, preparatory to a further advance. The British then advanced about thirty miles up the Tigris to the Diala, where they again came in contact with the enemy. Sir Percy Lake, in command of the British left, crossed the Tigris some distance below its junction with the Diala, and started a march on Bagdad, twenty miles away. During March 7-10 the British forced the crossing of the Diala and on the latter date attacked the Turks from both sides of the Tigris and drove them into Bagdad. During the night the Turks evacuated the city, leaving in the hands of the British their own artillery, captured at Kut-el-Amara, and a great number of Turkish guns. The fall of Bagdad was not of great strategic importance, but had a great moral effect throughout the world. Besides the entire cultivated lands of Babylonia fell into the hands of the British.



Courtesy of Review of Reviews

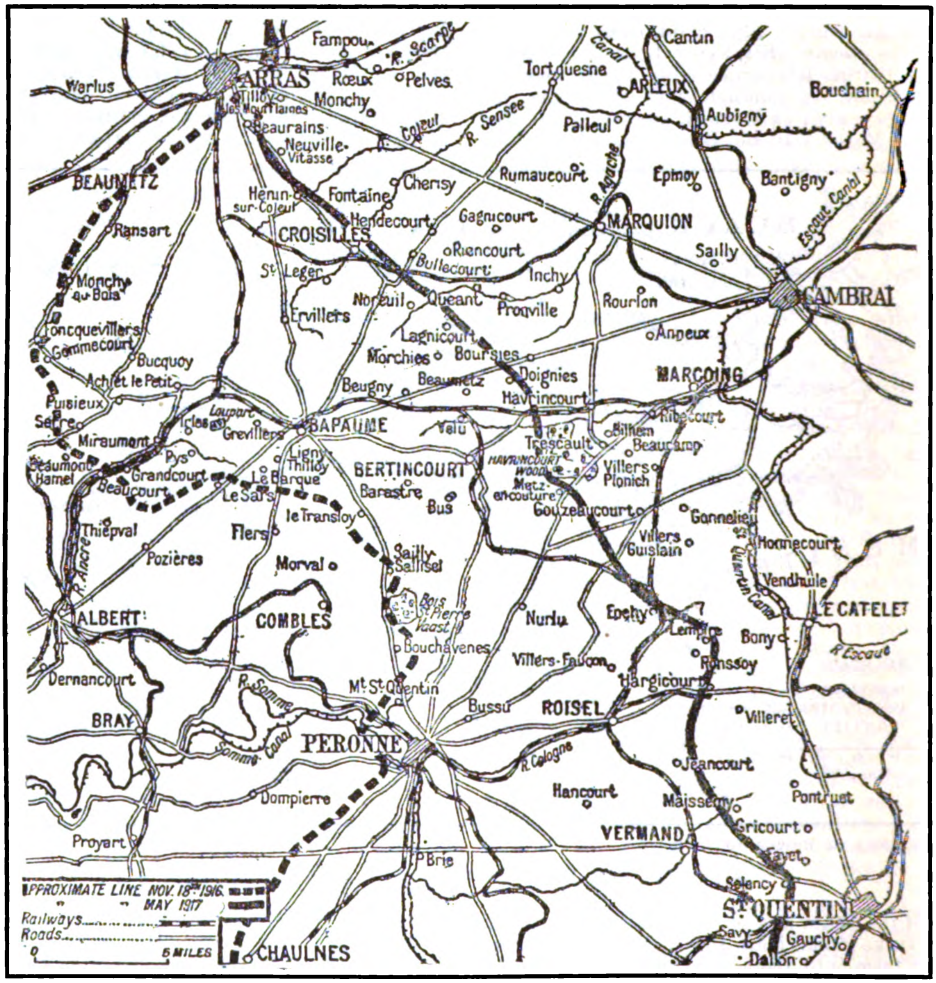
SCENE OF OPERATIONS IN PALESTINE AND MESOPOTAMIA

While the British were carrying out these operations on the Tigris, the Russians for a time gave great promise of lending them substantial aid in the conquest of Turkey in Asia. A Russian offensive drove the Turks from Hamadan and had almost put them to rout when the Russian revolution occurred and upset the entire plans of the Mesopotamian campaign. The Turks were able to withdraw troops from the Armenian front to stem the British advance. During June and July the Turks drove the Russians across the Persian border and left the British left wing in a very exposed position.

The Turks after the fall of Bagdad retreated up the Tigris toward Mosul and up the Euphrates toward Aleppo. The main army took the first route with the idea of holding the headwaters of the Diala, until they could rescue their army which was lost in Persia as a result of the Russian activity mentioned above. They had crossed the Persian border and actually joined hands with the British outposts. The British carried out a brilliant operation when they stormed Mushaidie ridge and railway station on March 14. On March 19, Gen. Maude seized Feluja, on the Euphrates, with the idea of ascending that river and capturing El Deir, which was the key to the crossroads leading to Damascus, Aleppo, and Mosul. His plan was to have the centre advance on Mosul, the right wing to clear the caravan route leading into Persia, and the left wing to secure El Deir. The first step accomplished in this advance was the capture of Samara on April 23, which secured the control of the Bagdad-Samara railroad and facilitated the bringing up of supplies. The British plans were again upset by the complete collapse of the Russian army and the occupation of Khanikan by the Turks (July). This place controls the caravan route from Bagdad to Kermansha.

The heat of the summer put an end to all fighting for the time being. When it was resumed the British captured the entire army of Ahmed Bey at Ramadie, on the Euphrates, on September 30. On October 5, the Russians took Nereman by assault. This is fifty miles north of Mosul, which was now threatened from the north and south. The British advanced nearer to it by capturing Tekrit, fifteen miles north of Samara. Operations came to a decided halt here because the growth of the Bolshevik movement caused the Russian aid to fail. Gen. von Falkenhayn was sent to Asia Minor to carry on the work of Gen. von der Goltz, who had been assassinated. He spent the remainder of the year at Aleppo building up the Turkish armies.

Partially due to Allied success in Mesopotamia and Palestine, the Hejaz, a province of Turkey in Asia, revolted and declared its independence, under the leadership of the Grand Sherif of Mecca, Hujayn Ibn Aly, who took the title of king. The Entente Allies engineered this revolt, which won over the orthodox Arabs and Syrians opposed to Turkish rule. Arms and ammunition of the latest type were supplied to the revolutionists and they seized several Turkish towns and seriously hampered their Syrian railway system.

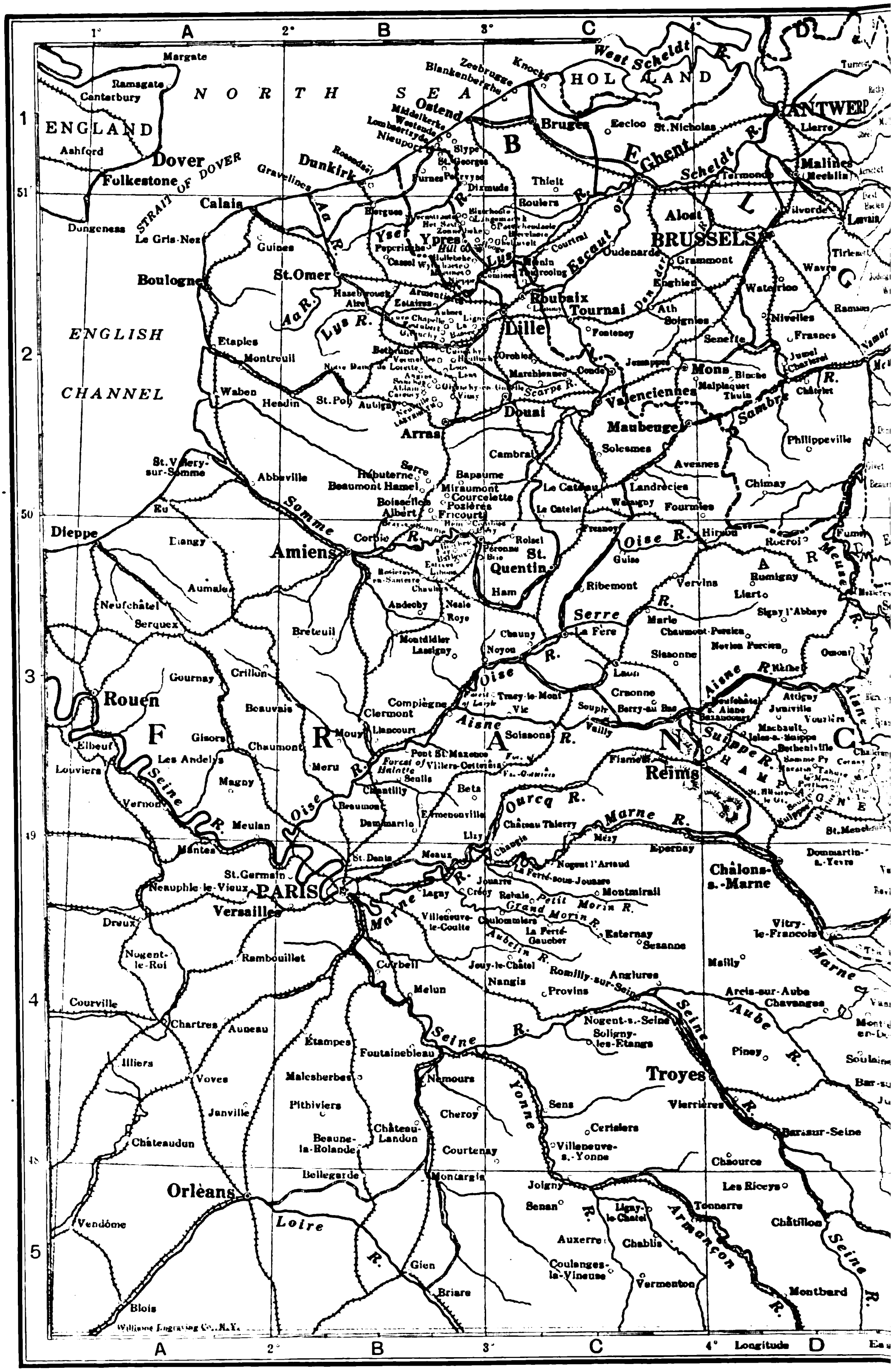


From Current History Magazine, New York Times Co.

SCENE OF THE GERMAN WITHDRAWAL

(5) *The German Withdrawal* (*March-April*)

Since the middle of March it had been fairly obvious that the Germans were contemplating a withdrawal on a scale far greater than the one being carried out in the Ancre River valley. Air scouts and news obtained from prisoners showed that the Germans had been preparing an exceptionally strong defense system, known as the "Hindenburg Line," some distance behind their present front. This branched off from the main German defenses near Arras, then ran southwest to Queant, and then ran to the west of Cambrai in the general direction of St. Quentin. Various branch lines, or "switches," ran into this main line. The British advance up the Ancre had pushed further and further into the Arras-Le Transloy line, which was really a salient, and had made it untenable. The new "Hindenburg Line" also seemed to indicate a general retirement from the larger salient from Arras to Rheims, with its tip near Noyon. This is what eventually happened. Von Hindenburg used the same system of defense during his withdrawal that he developed in the Ancre valley. Machine gun units were placed in selected strategic positions to delay the advance of the British and French. Trenches were practically emptied of soldiers, who were used



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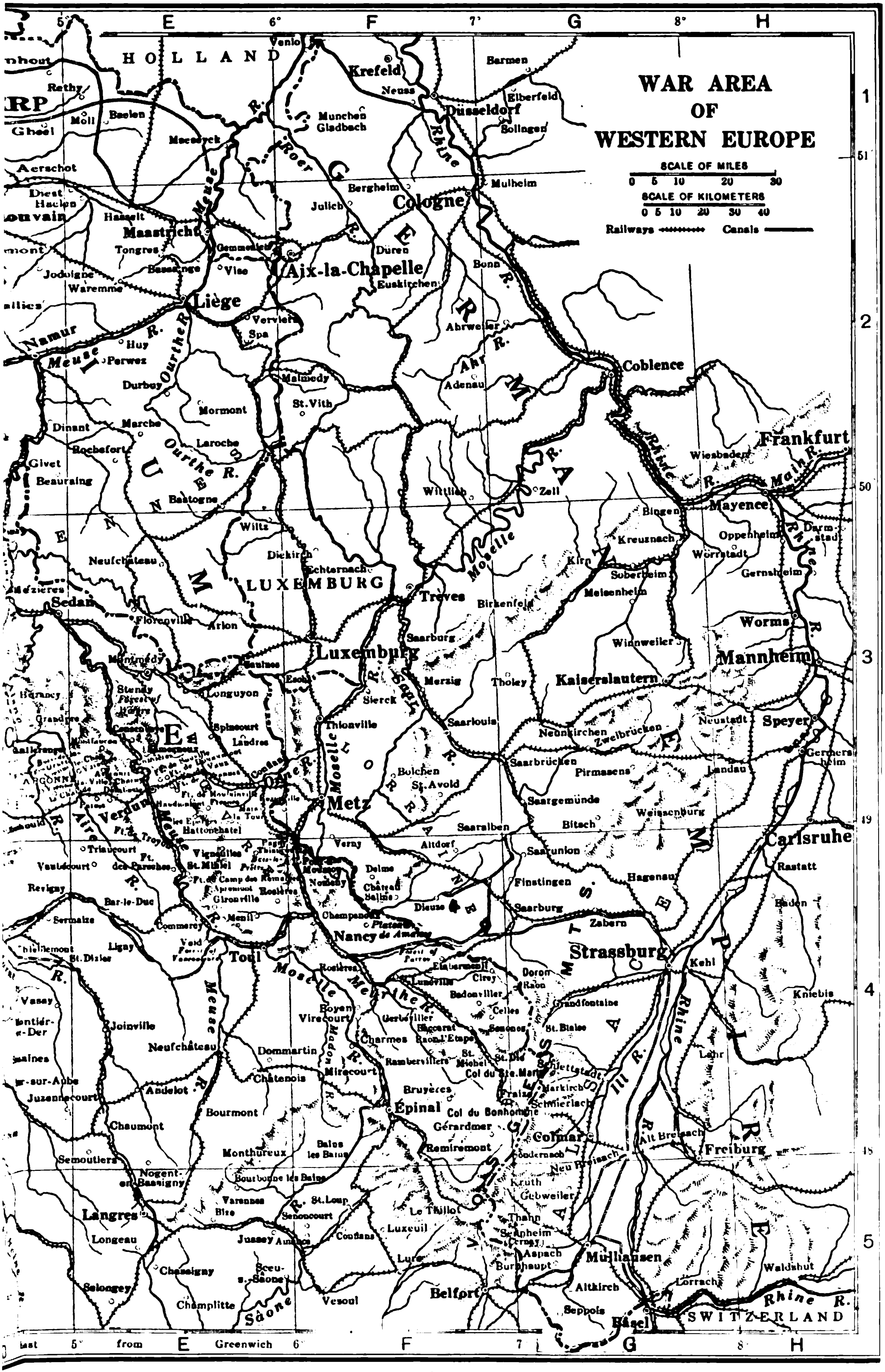

WAR AREA OF WESTERN EUROPE
SCALE OF MILES
0 5 10 20 30
SCALE OF KILOMETERS
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Railways
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HOLLAND
Venlo
Krefeld
Barmen
Neuss
Elberfeld
Düsseldorf
Solingen
Munchen Gladbach
Rethy
Moll
Baelen
Gheel
Maeseyck
Aerschot
Diest
Haelen
Louvain
Hasselt
Maastricht
Tongres
Gemmenich
Visé
Bassenge
Jodoigne
Waremme
Liège
Aix-la-Chapelle
Julich
Bergheim
Cologne
Mulheim
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Mormont
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Dinant
Rochefort
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Diekirch
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Neufchâteau
LUXEMBURG
Mézières
Sedan
Florenville
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Montmédy
Luxemburg
Longuyon
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Spincourt
Landres
Conflans
Grandpré
ARGONNE
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Neunkirchen
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Altdorf
Saarunion
Finstingen
Hagenau
Carlsruhe
Rastatt
Baden
Saarburg
Zabern
Dieuze
Château Salins
Delme
Nomeny
Verny
Pont-à-Mousson
Thiaucourt
Vigneulles
St. Mihiel
Hattonchâtel
Fresnes
Les Eparges
Triaucourt
Vaubécourt
Revigny
Bar-le-Duc
Commercy
Gironville
Apremont
Camp des Romains
Sermaize
Ligny
Void
Toul
Nancy
Champenoux
Plateau de Amance
Forêt de Parroy
Lunéville
Einville
Cirey
Domèvre
Raon
Badonviller
Celles
Senones
St. Blaise
Grandfontaine
Strassburg
Kehl
Kniebis
St. Dizier
Vassy
Montier-en-Der
Joinville
Neufchâteau
Dommartin
Châtenois
Mirecourt
Charmes
Vircourt
Bayon
Gerbéviller
Baccarat
Raon l'Etape
Rambervillers
St. Michel
St. Dié
Col du Ste. Marie
Schlettstadt
Markirch
Schnierlach
Lahr
Bar-sur-Aube
Juzennecourt
Andelot
Chaumont
Bourmont
Épinal
Bruyères
Col du Bonhomme
Gérardmer
Remiremont
Colmar
Alt Breisach
Freiburg
Sondernach
Neu Breisach
Semoutiers
Nogent-en-Bassigny
Monthureux
Bains les Bains
Bourbonne les Bains
Varennes
Bize
St. Loup
Senoncourt
Le Thillot
Kruth
Gebweiler
Thann
Sennheim
Cernay
Aspach
Burnhaupt
Mülhausen
Altkirch
Seppois
Basel
Lörrach
Waldshut
Langres
Longeau
Jussey
Conflans
Luxeuil
Lure
Belfort
Chassigny
Selongey
Champlitte
Seveux-s-Saône
Vesoul
Saône
Rhine R.
Ill R.
Meuse R.
Moselle R.
Meurthe R.
Madon R.
Aire R.
SWITZERLAND
GERMANY
BELGIUM
ALSACE
LORRAINE
VOSGES
BLACK FOREST
East 5° from Greenwich 6° 7° 8°

to transport ammunition, etc., to the rear and to devastate the territory covered by the retreat.

When the British discovered on March 15 that part of the German positions had been abandoned in the neighborhood of the forest of St. Pierre Vaast, and that a general retirement was being carried out, Gen. Haig gave orders for a general advance along the whole line from Arras to Roye. The French simultaneously began to advance from Roye to Rheims.

Chaulnes and Bapaume fell to the British on March 17. Peronne and Mont St. Quentin were occupied the next day. On the same day (18th) the British crossed to the eastern bank of the Somme at Brie, while further south the British and French cavalry occupied Nesle. By the nineteenth British infantry north of Peronne held the line of Bussu, Barastre, Velu, St. Leger, and Beaurains, while the cavalry was in contact with the enemy at Nurlu, Bertincourt, Noreuil, and Henin-sur-Cojeul. On the next day infantry and cavalry held the line from south of Germaine (where the British joined the French) through Hancourt and Nurlu to Bus. Further north the British occupied Morchies.

As the British north of the Bapaume-Cambrai road between Noreuil and Neuville-Vitasse were within two or three miles of the "Hindenburg Line," which joined the old line at Tilloy-les-Moufflaines, the German resistance began to stiffen. Counter attacks of increasing violence were delivered by the Germans, but the British gradually but surely pushed them back to the "Hindenburg Line."

In the meantime the French pursuit on the southern part of the line went forward just as rapidly, if not more so, than the British. The rapid pursuit was evidently a surprise to the Germans who were almost unable to fight even a rearguard action. The French without fighting any serious engagements occupied Noyon (March 18) and ultimately reached Tergnier, a town within two miles of La Fère. Moving east from Tergnier they pressed the Germans back on the Oise River as far as Moy. This put the French in a position east of St. Quentin and enabled them to work their way to the rear of the town to a point south of Neuville. Their line then ran westward near the suburbs of the city and then along the high ground south of it. Although practically all the approaches to the city were under fire of French and British artillery, the Germans managed to hold the city throughout the rest of the year, inasmuch as counterthrusts regained the most threatening positions.

Further south along the Aillette River (see map under *French Offensive on the Aisne*, IV, 7), the French met a severe check. This river guarded the forests of Coucy and St. Gobain, which protect the southern defenses of La Fère. The French after extremely heavy fighting, however, crossed the river and took the village of Coucy and the lower forest of Coucy at the southern end of the line. They were unable to penetrate the forest of St. Gobain, which was now recognized as one of the chief defenses of the "Hindenburg Line."

The reasons given for this great withdrawal were many and varied. German reports called it a strategical retreat and stated that Hindenburg was shortening his line and at the same time was drawing the Allies out into the open so that he could defeat them in a pitched battle. Another German report stated that the Germans were withdrawing to a new line in order to nullify the vast preparations the French and British had been making for a continuation of the battle of the Somme. The consensus of opinion among Allied military experts was that the withdrawal had been forced upon the Germans and was in no way voluntary. The British and French gains in the Somme and Ancre River valleys had threatened the entire Noyon salient to such an extent that further gains would have caused a gigantic German disaster. The restoration of French territory amounted to over 1000 square miles, containing between 350 and 400 towns and villages, which had a population of almost 200,000 before the war.

The territory abandoned by the Germans was a scene of horrible desolation. Wanton destruction was everywhere visible. The situation is probably best summed up in the contents of a note sent by the French government to its representatives in neutral countries against "acts of barbarism and devastation." "The government of the republic is now gathering the elements of protest which it intends sending to neutral governments against acts of barbarism and devastation committed by the Germans in French territory which they are evacuating while retreating. . . . No motive demanded by military necessities can justify the systematic devastation of public monuments, artistic and historical, as well as public property, accompanied by violence against persons. Cities and villages in their entirety have been pillaged, burned, and destroyed; private homes stripped of all furniture, which the enemy has carried off; fruit trees have been torn up or rendered useless for further production; streams and wells have been poisoned. The inhabitants, relatively few in number, who have not been removed, have been left with a minimum of rations, while the enemy seized stocks supplied by the neutral revictualing commission which were destined for the civil population.

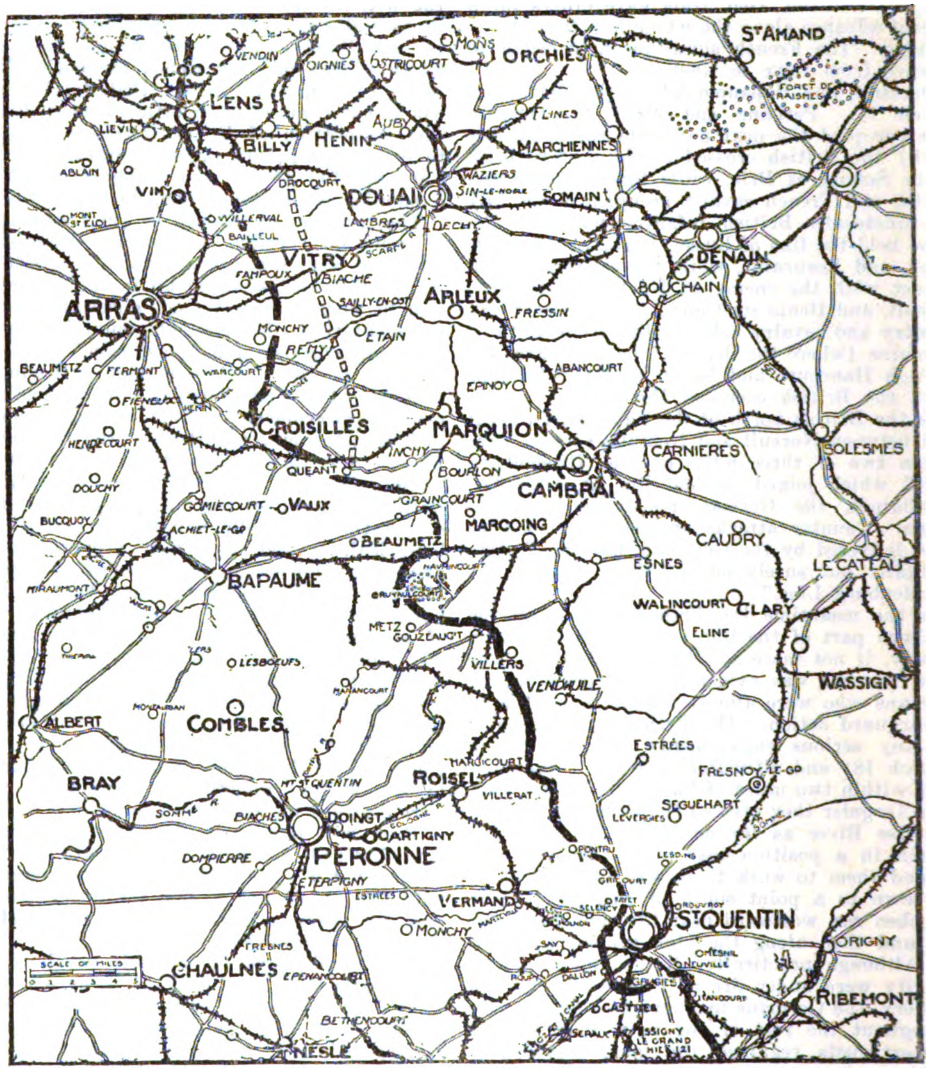
"You will point out that this concerns not acts destined to hinder the operations of our armies, but of devastation having no connection with this object and having for its purpose the ruin for years to come of one of the most fertile regions of France.

"The civilized world can only revolt against this conduct on the part of a nation which wanted to impose its culture on it, but which reveals itself once again as quite close to barbarism still, and, in a rage of disappointed ambition, tramples on the most sacred rights of humanity."

The German authorities upheld this devastation on the grounds that the destroyed territory was liable to become a battlefield and consequently structures of any kind might become machine gun nests; fruit trees would supply food to the enemy, etc.

The total destruction of roads, railways, etc., presented tremendous problems to the British and French transportation and engineering sections. They performed almost superhuman deeds of construction and other engineering work. They built temporary bridges over streams, roads around craters thirty and forty feet deep where crossroads had been blown up, temporary roads through fields, with such great rapidity that time and time again they were at the heels of the retreating Germans when they were supposed to be miles away. The speed of the pursuit can be estimated when it is stated that the Germans had rationed the civilians of some towns for five days and that these rations had scarcely been touched when the British and French entered the town.

one end, and St. Quentin, an important point in the "Hindenburg Line," at the other. The artillery preparation during the four days preceding the infantry attack, surpassed in intensity and destructiveness those preceding the German attack at Verdun and the Allied attack on the Somme. A word should be mentioned concerning the part played by aërial forces. The battle in the air was probably the greatest ever fought. The airplanes were in constant use in all kinds of weather, taking photographs of enemy positions, and bombarding strategical points. The "supremacy of the air," if such a term can be correctly used, was indubitably with the British.



From Current History Magazine, New York Times Co.

THE BATTLE OF ARRAS

(6) *The Battle of Arras* (*April-June*)

The German theory that the great Hindenburg withdrawal (March-April) was a strategical move to nullify tremendous preparations the British and French had been making during the winter months for a continuation of the Battle of the Somme, was exploded when the British began a gigantic offensive on April 9 in the neighborhood of Arras, and the French began a similar one from Soissons to Rheims, a few days later. The British struck on a front approximately forty-five miles long and they had for their objectives, Lens, the coal city, at

The battle opened on Easter Monday morning (April 9) with a tremendous offensive on a twelve-mile front north and south of Arras, from Givenchy-en-Gohelle, southwest of Lens, to Henin-sur-Cojeul, east of Arras. The German positions were penetrated to a depth of two or three miles and many important fortified positions, including Vimy ridge, were taken. The first "push" netted 6000 prisoners, several guns, and a great quantity of war material. The seizure of Vimy ridge was exceptionally important, inasmuch as it dominated the coal fields to the east. The task of taking it was left to the Canadians. Their way was made comparatively easy for them by the artillery preparation. The whole top of the hill was blown off and almost all the wire entanglements were swept away. An almost perfect "barrage" fire preceded the advancing waves of infantry. Prisoners stated that they had not been relieved or even fed for days because of the terrific gun fire. The Canadians took 2000 prisoners on Vimy ridge alone. This ridge was the northern "hinge" of the Hindenburg retreat in March and April, and a year ago the French had made extremely costly but unsuccessful efforts to hold the height.

On the second day of the battle, the British pushed still further on their line of original attack and added 5000 more prisoners and other great quantity of war material to their first day's gains. The infantry reached the outskirts of Monchy-le-Preux, five miles east of Arras. Further north the British advanced on both sides of the Scarpe River, and at the other end of the long battle line they made minor gains in the neighborhood of St. Quentin. In the centre, due west of Cambrai, the German defenses held firmly.

The weather conditions were very severe for April. It was exceedingly cold and a very heavy fall of snow necessarily hindered the activities of the armies. On the third day of the battle, the British captured Monchy, which the Germans had very strongly fortified. Every house and housetop was a machine gun nest, which made costly street fighting necessary. On this day the British also consolidated their gains and brought up their artillery. On April 12, the British took the villages of Wancourt and Heninel along with some strong positions north of the Scarpe. Severe counter attacks were made against the British positions at Monchy, but they were finally broken up by newly-arrived batteries.

On the fifth day of the battle the scene shifted. The British began offensives on both ends of their long line. Sweeping northward from their newly won positions north of Arras, they struck on a twelve-mile front from the Scarpe River to Loos, north of Lens, and advanced an average depth of about a mile. The town of Vimy was taken, as well as Ancre, which, with Lieven, protects Lens on the southwest. On the fourteenth, Lieven was also taken with a vast quantity of war material. On the afternoon of the same day the British entered Cité St. Pierre, northwest of Lens, and thus put the coal city in a dangerous "pocket." On the fifteenth, British troops entered the streets of the suburbs of the city itself and its fate seemed sealed.

While these operations were going on on the northern end of the line, the British attacked (April 13) on a nine-mile front from Metz-en-Couture, south of the Bapaume-Cambrai road, to Hargicourt, but failed to make any substantial progress because of the great quantities of reserves Gen. von Hindenburg had thrown into the battle line to prevent his famous defense line from being rolled up. At the extreme southern end of the line the British had pushed their way to within a few hundred yards of St. Quentin, and had captured the village of Fayet in hand to hand fighting. All attempts to take the city itself, however, failed. The number of prisoners taken so far were approximately 15,000 and the number of guns nearly 200.

The battle of Arras now entered its second phase. The first phase, made after great preparation and with a certain element of surprise, had achieved success all along the line. The Germans now, however, knew where to expect attacks, and, consequently, vast quantities of men and material had been collected behind the "Hindenburg Line" to stem the British advance. As a result further British progress was to be a much harder proposition. On April 23, they attacked the so-called "Oppy Line," which was a switch line protecting the "Hindenburg Line" north and south of Vitry-en-Artois. The attack was made between Gavrelle, Guémappe, and Fontaine-les-Croisilles. The "Oppy Line" was protected by a great number of machine gun units placed in villages, trenches, and shell-holes, and could sweep any line of advance from the front and flanks. After six days of bloody fighting the British broke the "Oppy Line" when Canadian troops entered Arleux-en-Gohelle and English troops entered Oppy, and part of the village of Roeux. The Germans now began to make use of their reserves in a series of counter attacks, carried out by great masses of men. These broke down with terrific losses before the British positions at Gavrelle, Monchy, Guémappe, and Lagnicourt. The windmill at the first mentioned village changed hands no less than eight times up to May 4. Fresnoy was taken on May 3 by Canadian troops, but was retaken on May 8 by a furious counter assault. Australian troops entered Bullecourt (May 13-17) and Roeux was also captured (May 13-15). It would be almost impossible to relate here the fighting of the next three weeks. It was on a narrow front between Fresnoy and Queant. The British made advances in the neighborhood of Oppy, Roeux, and Bullecourt, but they were almost immediately nullified by German counter attacks. Because of the weight of men and material the Germans used in counter assaults they were almost invariably successful.

By the first of June it was apparent that the battle was at a deadlock. The Germans had a secure hold on Fresnoy, Oppy, Roeux, Pelves, and Cherisy. The British had a strong grip on Bullecourt. From a strictly military point of view the Germans had been victorious. The British failed to break the "Hindenburg Line" or its switch line from Drocourt to Queant, which was partially protected by the "Oppy Line." The only real military advantage gained by the British was the placing of the coal city of Lens in a dangerous "pocket," from which it was impossible to escape unless the famous Vimy ridge was retaken. The real advantage to the Allies was the carrying out of its policy of attrition, i. e., wearing the Germans down in manpower and material. The idea of the British general staff seems to have been to compel the Germans to counter attack rather than to have the British army conquer territory. Counter attacks cost far more lives than attacks well protected by barrage fire. It is also impossible to prepare for counter assaults with artillery to any great extent, because the element of success depends on attacking the enemy before he is able to consolidate his newly won ground. The losses in the German counter attacks during the Battle of Arras were unequaled in the war and far exceeded those of the British.

(7) *The French Offensive on the Aisne* (*April-November*)

On April 16, the French began an offensive on the Aisne River, the object of which was to destroy the southern pivot of the Hindenburg withdrawal just as the British had destroyed the northern pivot at Vimy ridge on April 9. The battle line was twenty-five miles long, from Soissons to Rheims and the positions had been held by the Germans from the time they had retreated from the Marne. On the first day of the offensive the entire first line and part of the second line of German trenches were seized, along with 10,000 prisoners and a great quantity of war material. By April 9, 17,000 prisoners and seventy-five guns were officially counted by the French commanders. The villages of Chavonne, Chivy, Ostel, and Bry-en-Laonnis were taken. Further to the west, on the south bank of the Aisne, the French took Vailly and a strong bridgehead after a powerful attack. Following their policy adopted in the Battle of Arras, the Germans delivered fierce counter attacks, carried out by great masses of troops, against these newly won positions, but they broke down before the attackers reached the French lines, and the attackers themselves suffered tremendous losses. On April 19, between Berry-au-Bac and Juvincourt, Hindenburg threw 30,000 of his best troops into the breach to stem the tide. Although this was the weakest point in the French line, the attackers were hurled back with terrible losses. The French so far had succeeded in straightening out the German salient, which had Fort Condé, on the Oise, for its tip.

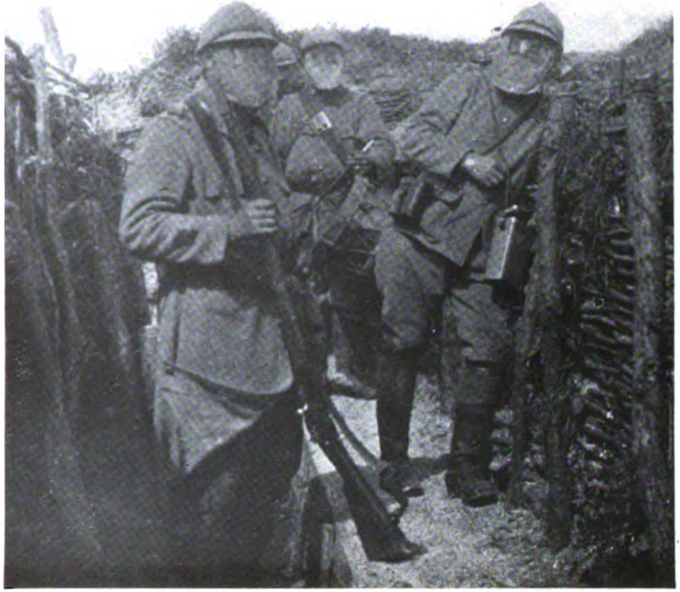
The scene of the battle now centred around the Chemin des Dames (Ladies' Way), which was a beautiful shaded road running along the heights north of the Aisne. It had been specially constructed by Louis XV as a promenade for his daughters. The terrain of this part of the battle line was very peculiar. From the Aisne River, passing north to Craonne there is a limestone plateau, which is heavily wooded, and traversed by ravines and deep gullies, which were almost perfect concealments for machine gun emplacements. The limestone was honeycombed with caves and grottos, most of them natural, but some of them artificial, having been constructed by the Germans. In many cases the heavy French bombardment had no effect whatever on the German positions because they were so far underground.

On May 4, the French took Craonne village, which is about ten miles southeast of Laon and on the eastern end of the Chemin des Dames. On the next day they attacked on both ends of the Chemin des Dames, and took over 4000 prisoners. On both sides of the Soissons-Laon road (western end of Chemin des Dames), they carried a German salient on a four-mile front, extending their line from east of Vauxaillon to north of Sancy. On the eastern end of the Chemin des Dames, the French pushed forward on the limestone plateau as far as Cerny-en-Laonnois, and took the hills which dominated the Ailette River valley. For the rest of the summer their line remained in approximately these positions. Almost in the centre of the heights north of the Aisne was the famous old fort of Malmaison. It had been officially abandoned as a fort by the French before the war broke out, but in the hands of the Germans it had been turned into an almost impregnable position. It was a mass of machine gun emplacements and had an intricate system of tunnels and caves connecting it with the German rear. French attempts to take it in April and May were futile, although an almost continual rain of steel had been poured on it. The German Crown Prince during the summer months is estimated to have lost over 100,000 men in unsuccessful efforts to regain the eastern and western ends of the Chemin des Dames. He made furious counter attacks on the newly won French positions and sought to take the initiative in the neighborhood of Soissons and Rheims, but all to no avail. Despite local German successes, the French lines held. They (the French) had also materially strengthened their positions around Rheims, which had been heavily bombarded throughout the campaign. Architects predicted that the famous cathedral at Rheims had been weakened to such an extent by the German artillery that it was in danger of falling to pieces at any moment.

After a lull of several months the final climax of the French offensive on the Aisne occurred in October. On the twenty-third of that month, the French executed one of the most brilliant offensives of the war. They struck on a six-mile front northeast of Soissons and advanced to an average depth of a mile and a half. The coöperation between the artillery, "tanks," aëroplanes, and infantry was a tribute to Gen. Pétain's careful preparation. The attack extended from Laffaux, near Vauxaillon, to the La Royère farm in the neighborhood of Fort Malmaison. The offensive was everywhere successful. All the German first line positions were seized and their hold on the Chemin des Dames was made untenable. Consequently, by November 1, they were compelled to give up the entire sector and retire across the Ailette River, which flows in front of Laon. In this last thrust the French regained nearly forty square miles of territory, took 12,000 prisoners, 200 guns, 700 machine guns, and 200 trench mortars, besides several thousand rifles and great stores of war material. The new French positions dominated the Aisne and Ailette valleys. They also opened up the possibilities of an offensive on Laon and the whole southern end of the "Hindenburg Line" as far north as La Fère.

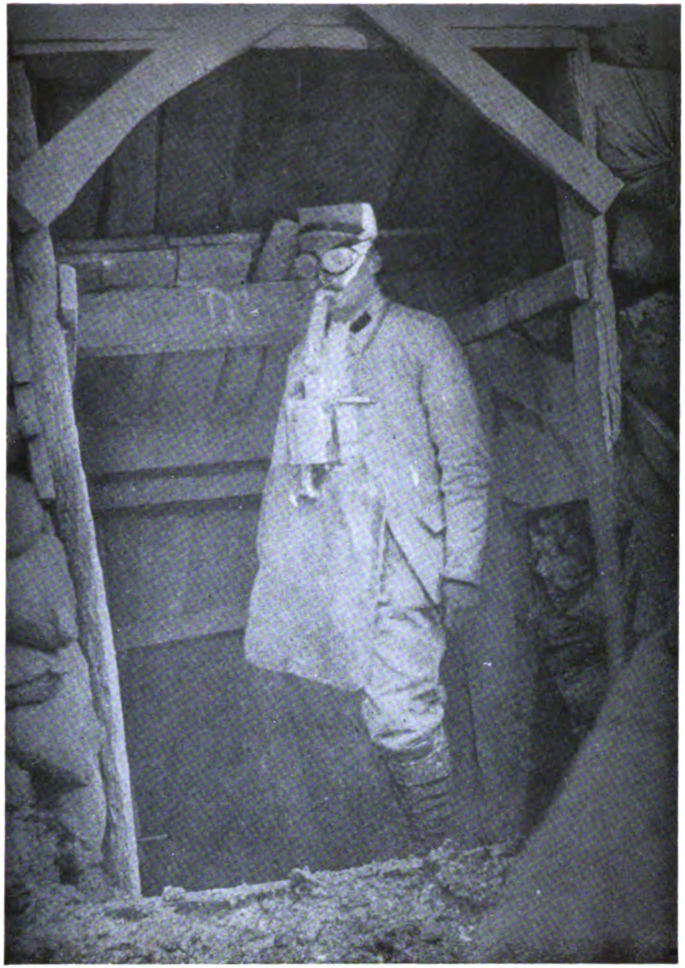
(8) *Italian Spring Offensive* (*May-June*)

It will be remembered that in May, 1916, the Austrians began a great offensive against the Italian positions around the Lake of Garda and the Asiago plateau, with the idea of outflanking the Venetian plains. After an auspicious beginning, they were compelled to abandon this offensive because of the great Russian movement in Galicia. The Italians immediately recovered all the lost territory and started an offensive of their own on a grand scale. This ended at the beginning of winter after the capture of



Photographs from Jacques Boyer, Paris

GROUP OF FRENCH SOLDIERS WITH GAS MASKS IN A TRENCH READY FOR AN ATTACK OF ASPHYXIATING GAS



FRENCH SAPPER WITH RESPIRATION APPARATUS ABOUT TO ENTER A GALLERY AFTER A MINE EXPLOSION

TRENCH SCENES ON THE FRENCH FRONT

Gorizia, Loguizza, and Jamiano, along with 39,000 prisoners. A strong foothold was made on the Carso plateau and they rested there with the idea of renewing the campaign in the spring.

The winter on the Italian front was much more severe than usual and of long duration. Despite adverse weather conditions, the activity behind the lines was feverish. The Italians spent their time in preparing to resist an offensive, which the Austrians were preparing in the Trentino and which had been discovered by the Italian air service. At the same time they were preparing with minute care a tremendous offensive on the southern part of their battleline, which was supposed to conquer Trieste and Laibach, and thus destroy German naval power on the Adriatic and open up the way to Vienna. The plans as announced later by the Italian general staff were as follows: First, to engage the enemy on the entire front from Tolmino to the sea in an intense artillery action, which would leave him doubtful as to the real direction of the decisive attacks which were to be made; then to attack on the right wing of the southern army to the north of Gorizia; and, lastly, to strike on the Carso plateau.

The extreme lateness of the spring and the amount and care of the preparations prevented a beginning of operations until May. On the twelfth of that month, violent artillery fire broke out on the entire line from Tolmino to the sea. Two days later the infantry advanced and won initial successes on Monte Cucco and Monte Santo. Despite the intensity and driving power of the Italian blow, the Austrians on the entire front presented a stubborn and determined resistance. On the fifteenth the Italians crossed the Isonzo between Loga and Bodrez and also made gains on the two mountains mentioned above, as well as on the Vodice ridge. It took a week of desperate fighting before the Italians were able to consolidate these gains, but by the twenty-second they had a firm grip on the whole mountainous ridge which separates the valley of the Isonzo from the deep valley which branches out in front of Anhovo. The Italian war office announced that so far they had taken over 7000 prisoners.

The Austrians now made use of the preparations they had made during the winter months for an offensive movement, to create a diversion in the Trentino region. This consisted of a series of attacks which lasted from May 19 to May 22. Unsuccessful attacks were made in the Sugana valley, on the Asiago plateau, around Lake Garda, and in the Adige valley. This whole terrain was the scene of brilliant fighting during Napoleon's first Italian campaign. The most violent attack of all was repulsed by the Italians on May 22, after temporary Austrian successes in the Piccolo Colbricon and in the Travignolo valley. In this unsuccessful attempt to nullify and check the Italian offensive, the Austrians lost many men in killed, wounded, and captured.

On May 23, after intense artillery preparation, the Italian infantry began to advance again by attacking the southern edge of the Carso plateau, from Castagnavizza to the sea. Great fleets of airplanes flying low to the ground were of material aid to the infantry in this attack. Lucati, all of Jamiano, Bagni, and several important heights were captured. On the next day the advance was continued on a much wider front, this time from the vicinity of Gorizia to the sea. Although the Italians gained ground it was only in the face of exceedingly stubborn resistance—counter attacks, violent artillery fire, and aërial bombardments from low flying aëroplanes. At the extreme southern end of the line huge British and Italian monitors, carrying naval guns of the largest type, did very effective work in bombarding the Austrian lines. In this phase of the battle the Italians captured 17,000 prisoners and were within eleven miles of their objective, Trieste.

On June 1, the Austrians, strengthened by great numbers of men and material brought from the Eastern Front as the result of the complete collapse of the Russian armies owing to the revolution, began an offensive on a large scale, which compelled the Italians to retire somewhat from their newly won positions. After three days of violent shelling they began an attack from Monte S. Marco to the sea. At the beginning it was successful. Italian positions on Monte S. Marco were taken and positions on Dosso Faiti were penetrated. South of Jamiano, the Italians were compelled to give up a strip of territory which they did not have time to consolidate. Gen. Cadorna, the commander-in-chief of the Italian armies, now began an offensive in the Trentino which compelled the Austrians to give up their offensive in the south. The spring campaign now came to a halt with the Italians securely entrenched on the edge of the Carso and holding most of the gains they had made. There is no doubt that the bitter fighting during May and June favored the Italian forces, although it is doubtful if they penetrated the Austrian lines as far as the general staff had hoped.

(9) *American Expeditionary Force* (*June —*)

After the declaration of war by the United States on Germany on April 6, public opinion in the United States and abroad wondered considerably what part the new member of the Allies would play in the world-wide war. The opinion at home and in the Allied countries seemed to be that not very much help on the battle fronts would be quickly forthcoming from the great republic on the Western Hemisphere. They looked for financial and economic aid rather than for manpower and gunpower. Before the declaration of war the American army consisted of less than 100,000 men, and experience on the continent had proved that it took from six to nine months to turn out an efficient soldier. In order to make the United States army an efficient fighting force, preparations on a gigantic scale were immediately entered upon. The State National Guard was called into Federal service, the regular army and marine corps recruited to full war strength, and the Selective Conscription Act passed. In Germany these preparations and the very entrance of the United States into the war was laughed at. The American army in comparison with the well-trained and seasoned German millions was an object of ridicule. Well-known German military experts put the effect of the United States' entrance into the war on a par with that of Rumania's. The feeling was widespread in Germany that even if the United States did raise and equip a big army, she would be unable to transport it to Europe and keep it supplied with materials and provisions, because of the big inroads made on the shipping of the world by submarine activity.

The first contingent of an army from the United States of America to ever fight on European soil disembarked at a French port on June 26 and 27. Maj. Gen. William L. Sibert, who commanded this over-seas force, and his men, received a tremendous ovation. The town authorities had declared a holiday, and the khaki clad men marched to their barracks through lanes of men, women, and children, waving the American and French flags and shouting "Vivent les États Unis." The transports had several narrow escapes on their way over to France. They were twice unsuccessfully attacked by submarines, which were driven off by the convoying destroyers. Maj. Gen. John L. Pershing (who was later raised to the rank of full general by President Wilson), the commander-in-chief of the American Expeditionary Force, had been in France some time preparing for the coming of the "Sammies" as the French people nicknamed the American soldiers.

Training camps had been located in various parts of France and were ready for occupancy when the troops arrived. Infantry, artillery, cavalry, aviation, and medical bases were established. Besides these branches, special regiments were recruited in the United States and sent abroad as soon as possible. Some of the more numerous of the latter were engineers, railroad men, lumbermen, laborers, and aëroplane mechanics. The volunteer American ambulance drivers and the Lafayette Escadrille (an American flying squadron in the service of France) were taken over into United States service by Gen. Pershing. The number of troops going "over there" was gradually increased, many of them stopping in England before going to France. Although the total number of troops on foreign soil was never divulged by the War Department, Secretary Baker announced that the number being sent over exceeded the expectations and schedule of the authorities.

An intensive system of training, consisting of trench digging, bayonet fighting, bomb throwing, the use of gas masks, etc., was entered upon in July. The instructors were officers and men of the British and French armies, who had seen considerable service at the front. The American transport service took over all railways leading to the American bases and a section of a French national forest was turned over to American lumbermen to supply the needs of the expeditionary force.

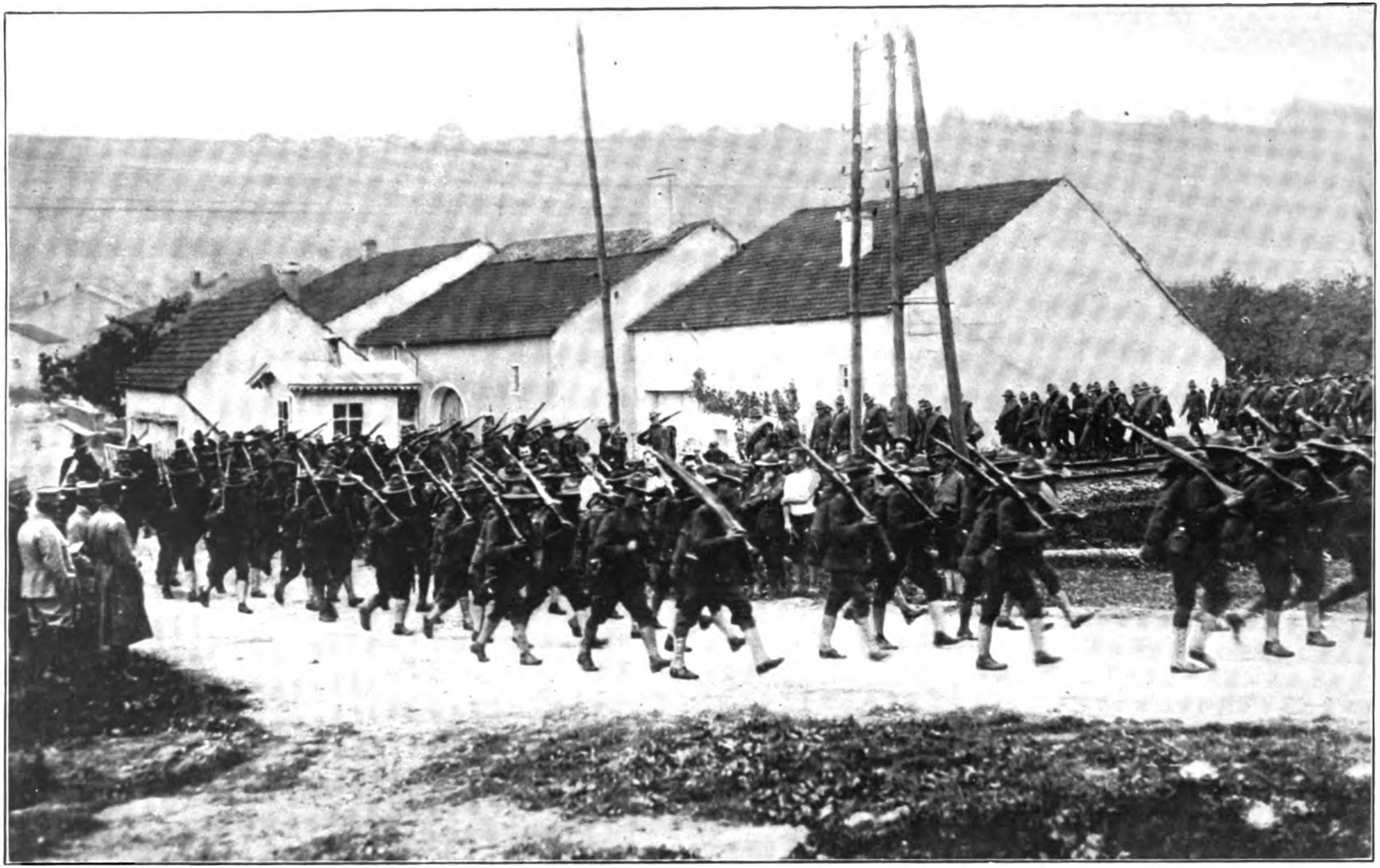
The news that units of United States troops were in action "somewhere in France" was given out in a dispatch on October 27, 1917. This stated that American artillerymen had fired their first shot at the Germans and that American troops were in first line trenches. This active participation in the war did not mean that American forces had taken over a section of the front, but that they were completing their training under actual war conditions. American patrols a few nights later crept out into "No Man's Land" on reconnoitring expeditions. At stated intervals the troops in the trenches were changed so that as many of them as possible could be initiated into the real conditions of war. On November 3 the Berlin official report announced the capture of American troops, when an advance trench in which they were located was cut off from the main trenches by a heavy barrage fire. Three Americans were killed, eleven missing, and about the same number injured. Although no official announcement has been made by the War Department as to the location of the American troops, outside of the bare statement that it was on a quiet sector of the front, a comparison of the various European reports show that the region was in the Vosges Mountains, where the Rhine-Marne Canal crosses the boundary line of France and Lorraine. During November and December, intermittent artillery duels and patrol engagements occurred but no conflict of any size developed. The unusual activity behind the German lines during the winter months was taken by Allied military experts as an indication that Germany was going to try to win the war by a supreme effort before the American army could be a vital factor. They also agreed that the entrance of the United States into the war on the side of the Allies more than neutralized the complete collapse of Russia.

(*10*) *Messines Ridge* (*June*)

After the defeat of the German thrust at Calais, called the battle of Ypres, in the early stages of the war, the position of the German and British lines was very peculiar. They resembled a huge S made backwards. Ypres was in the upper arc and Messines Ridge in the lower arc. The British line was really a great salient bulging into the German line. Messines Ridge in German hands was a serious menace to the entire British salient at Ypres as there was the ever present danger of an attack in force which would crush the southern side of the British defenses and as a result reopen the way to Calais. All the dominant artillery positions were in the hands of the Germans, and the manner in which the British had held on to the Ypres salient was almost miraculous.

The objects of the British attack on these positions in June were to straighten out the British lines south of Ypres and to get control of Messines Ridge which was about 250 feet high, the highest within a radius of 10 miles of this section of the front. General Sir Herbert C. O. Plumer was in direct charge of the operations. Very careful preparations were made to accomplish the above mentioned objects. For over 15 months British and colonial sappers had been digging under the low range of hills called Messines Ridge. They placed 19 mines, containing nearly 500 tons of ammonite, under the principal German fortifications, the forward positions of which consisted of elaborate systems of well wired trenches covering an area a mile wide. These were protected by artillery in the rear made up of all calibres and so located as to cover the flanks as well as the centre of an attack.

Early in the morning of June 7 the mines were set off by electric contact and a man-made earthquake, awesome and grewsome, occurred. The tops of the hills were blown off and the earth rocked like a ship rolling at sea. The roar of the explosion could be heard within a radius of 150 miles. Simultaneously with the explosion of the mines the artillery reached the height of intensity after a two weeks' preparation. The greater portion of the German first line trenches, dugouts, etc., were ob-



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AMERICAN TROOPS MARCHING THROUGH A FRENCH VILLAGE

literated. Then the infantry, composed of English, Irish, Australian, and New Zealand units, swept forward on a front extending from Observation Ridge, south of Ypres, to Ploegsteert wood, north of Armentières, and within a few minutes captured the entire first line positions on a ten-mile front. These included the villages of Messines and Wytschaete. The latter town was called "White Sheet" by the British "Tommies."

Within three hours the entire top of the ridge had been cleared and later in the day the rear positions of the ridge were assaulted. These ran along the base of the ridge itself. The German defense here was stiffer than any yet encountered, but after fierce fighting the village of Oosttaverne and the entire defenses on a five-mile front and three miles deep were captured. During the progress of the battle the British artillery had been brought to the top of the ridge with the result that the Germans were compelled to abandon their lines between the Lys River and the village of St. Yves, with scarcely any infantry fighting. The British lines after this battle ran on a straight line from east of Zillebeke to a point east of Armentières. Seven thousand prisoners fell into British hands and the estimated German casualties were 30,000. The British lost in the neighborhood of 10,000 men.

(11) *Russian Summer Offensive* (*July*)

After the breakdown of the Russian Winter Offensive, aimed at Mitau, in January the entire Russian front was quiet until Kerensky came into power (see RUSSIA, *History*). As a result of his efforts, an offensive on a large scale was carried out by Gen. Brusilov under the personal direction of Kerensky. When the operations of the previous year ceased the battle line was on the eastern bank of the Zlota Lipa River from near Zloczow to Brzezany. It made a loop around this city, ran almost due south to the Dniester, which it crossed, and joined the Rumanian army on the boundary line of Transylvania and Rumania. The Russians determined to strike on this line with Lemberg as their objective. The Zlota Lipa is a rapid stream, flowing between steep banks, and one which would be very hard to cross by a frontal attack. Consequently, Kerensky and Gen. Brusilov decided to strike on the upper reaches of this river, where it was narrower and its banks less precipitous, and thus outflank the Austro-German positions.

On July 1 the Russians struck on a narrow front in the neighborhood of Zloczow. They took the village of Koniuchy and about 10,000 prisoners but were unable to break through the main positions of the enemy. The fighting was very heavy and the morale of the Russian army of the highest order. Brusilov's army surprised the world with the vigor of its assault and its seemingly limitless supply of ammunition. Not meeting with success in the vicinity of Zloczow, the attack was shifted to Brzezany, but here also the Russians were unable to pierce the hostile lines, which were defended by high ground in their rear.

After the failure of these attempts, the Russian command suddenly shifted the attack to south of the Dniester, driving due west in the neighborhood of Stanislau. The strategy of this blow was to strike the Austro-German lines where the forces of these two countries joined, and then drive a wedge in between them. It was strategy similar to this that made Napoleon's first Italian campaign a success. The weight of the onslaught broke the enemy lines and the Russian cavalry swept through the breach on a wide front. They crossed the Lukwa River, which was a strong defensive line, and seized the town of Kalucz, which they found unoccupied. This place is on the Lemberg-Stanislau railroad and was formerly the Austrian army's headquarters. German forces, sent south to aid the Austrians, drove the Russians out of Kalucz, but after fierce fighting they securely reëstablished themselves in the town. The Russians then pushed westward and crossed the Lomnica River, the last natural defense in front of Stryj. Simultaneously with this attack south of the Dniester, the Russians started a drive on the Dniester itself and took the important city of Halicz by storm. This place was the last stronghold south of Lemberg. The high tide of the Russian offensive was now reached, however. They had taken 50,000 prisoners and vast quantities of war material. A wedge 20 miles long and 10 miles deep had been driven into the Austro-German lines.

This drive turned out to be of no avail. Various sections of the Russian army mutinied, with the result that the entire army was compelled to withdraw. On July 19 the Germans began a counter movement and penetrated the Russian positions on a wide front near Zloczow. Russian trenches near Brzezany were occupied the next day owing to the mutiny of some extreme socialistic troops. The whole line in Galicia now began to retire. The Germans and their Austrian allies occupied Tarnopol, Stanislau, Nadwaorna, Czernowitz, and Kolomea and drove the Russians across their own border and out of Galicia. Spasmodic attempts to take the offensive on the Rumanian front and in the north, to relieve the pressure in Galicia, were frustrated by mutiny among the troops.

(12) *British Reverse on the Yser* (*July*)

The Germans retaliated to some extent for the wiping out of the Messines Ridge salient on June 7, by making a successful attack on the northern extremity of the Allied line in Flanders. It was practically the only real offensive they carried out on the Western Front during the entire year. The British lines in this sector were very peculiar. The main British positions were west of the Yser River, with the centre of communications at Nieuport. The front line trenches, for a distance of about three miles from the coast, were about 600 yards east of the Yser. There was always considerable mystery as to why the British staff selected this line, inasmuch as when it was formed it was part of a defensive line, held during the German drive for Calais. All the supplies for the first line trenches had to be carried across the river, and there was the ever present danger of German artillery destroying the approaches, and thus catching the infantry between the river and enemy lines.

This is exactly what happened. The Germans, apparently without any knowledge or even suspicion on the part of the British, concentrated a mass of artillery on this front, and on July

11 began an artillery action of great intensity. The land here was very flat with the exception of an occasional sand dune, and the trenches were made of piled-up sandbags instead of being dug. These were immediately destroyed as were the approaches across the Yser River and canal. Then the German infantry rushed forward and killed or captured practically all the British troops east of the Yser. These probably numbered 3000 of which 1200 were taken prisoner. The military results were almost negligible. As the Germans had destroyed all the bridges they were not able to cross the river if they wanted to. On the other hand, it meant that if the British wanted to start an offensive up the Belgian coast they would have to cross the Yser River in the face of hostile artillery fire.

(*13*) *Italian Summer Campaign* (*July-October*)

When the Italian spring campaign came to a halt in June, the General Staff immediately began to make preparations on a large scale for the renewal of the operations against Laibach and Trieste. They were materially aided by the beginning of hostilities again on the Russian front (see section, *Russian Summer Offensive*, IV, *11*). During July and August the opposing armies battled back and forth in an endeavor to get advantageous positions. The Italians advanced on the Carso and took Dalino, and repulsed strong Austrian attacks in force in the Trentino. The Austrians kept up a continual artillery bombardment in an attempt to break up the Italian preparations for an offensive. On the night of August 18 the Italian offensive began from Tolmino to the sea. The main attack was made by the Third Army, under Gen. Cappello, which operated on the Bainsizza plateau, Monte Santo, and Monte San Gabriele, and the Second Army, commanded by the Duke of Aosta, a cousin of the king, which operated in the Vippacco and Brestovizza valleys, and in front of the Hermada Mountains, which are the key to Trieste. The allied monitors and great numbers of aëroplanes again aided the advance.

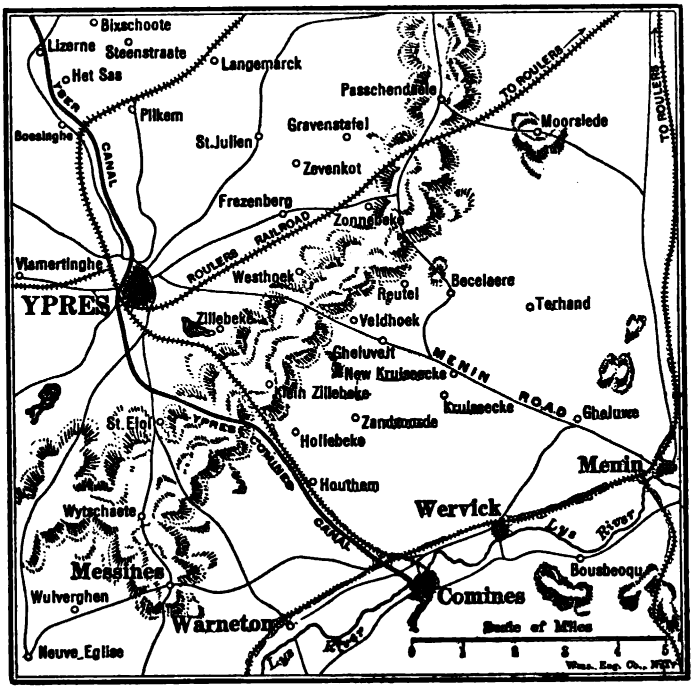
One of the outstanding features of the Italian preparations was a great engineering feat carried out on the Isonzo River. The engineers had diverted the course of this river from its bed above Anhovo and had built bridges across the shallow stream that remained. This work was done at night and at daybreak the water was rediverted to its regular channel, without detection by the Austrians. By means of these bridges and hastily constructed pontoon bridges the Italians crossed the river on the 18th and gained a foothold on the northern edge of the Bainsizza plateau. Simultaneously with this action the right wing of Gen. Cappello's army began to envelop Monte Santo. These two movements compelled the Austrians to rapidly retire to the easternmost edge of the Bainsizza plateau. From the nature of the defenses it was quite apparent that the Austrian General Staff thought the plateau impregnable. Great quantities of prisoners, provisions, and military stores fell into the hands of the Italians. On August 24 the Italians occupied the summit of Monte Santo, 2240 feet high, and on September 14 Monte San Gabriele, 1700 feet above the Isonzo, and 300 feet higher than Monte San Daniele. The Austrians still held the eastern slopes of Monte San Gabriele.

Operations in the south carried out by the Duke of Aosta's army proceeded favorably for the Italians, although much less rapidly than further north. His object was to surround the Hermada Mountains and to occupy the Vippacco Valley. Despite local successes, he was unable to accomplish these objects after strenuous efforts. During September and early October, the Second Army had succeeded in driving the Austrians from the slopes of Monte San Gabriele and in making slight gains on the Bainsizza and Carso plateaus. The Italian forces were resting up for another supreme effort to break through, when the sudden Austro-German drive at the northern extremity of their battle line compelled them to give up their entire gains of the year.

(*14*) *Battle of Flanders* (*July-December*)

The successful operations against the Messines Ridge in June and the deadlock in the Battle of Arras apparently caused the British General Staff to start an offensive in the Ypres section. As has been said above, Messines Ridge in German hands was a potent menace against the British flank, which was completely dominated by it. Messines Ridge in British hands enabled them to take the offensive instead of being continually on the defensive. Consequently, on July 31, the British and French began an offensive which lasted intermittently down to the beginning of 1918, when weather conditions called a halt. The immediate object of the offensive was to get control of the high ground in front of Ypres, called Passchendaele Ridge. The ultimate objectives of the offensive were to compel the Germans to retire from the Belgian coast and thus give up their submarine bases at Ostend and Zeebrugge, and also to envelop the industrial centre of Lille and the railway centre at Roulers. The entire country in this section is flat with the exception of Passchendaele Ridge. Heavy rains were frequent throughout the period of the fighting, which made the terrain a veritable sea of mud. Troops floundered along up to their knees in it, and artillery was moved only with the greatest difficulty. What trenches there were, were, in most cases, made of bags of sand piled one on top of the other.

For three weeks preceding the battle the artillery preparation had been stupendous. British guns of all calibres pounded the German lines and the Germans rushed up great masses of guns and men to meet the expected attack. The duel reached its greatest intensity on July 31, when, after a temporary lull, the British and French infantry struck on a 20-mile front from Dixmude to Warneton. The attacking troops carried everything before them, penetrating in some cases beyond the German third line trenches. On the next day a severe rainstorm, which lasted fifty hours, began and, perforce, held up further operations until the ground dried out sufficiently to make it passable. The next blow fell on August 10, when the British carried Westhoek village and ridge by storm and the French, on their left, took Bixschoote. On the 11th, the British occupied part of Glencourse wood. It is almost impossible to describe the intensity and effectiveness of the British artillery fire accompanying these operations. They seemed to have an unlimited supply of ammunition stored up within very handy reach of the gunners. On one occasion an eye witness counted five distinct barrage fires moving accurately and methodically in advance of the British infantry. In the face of a fire like that, no man-made trench could remain in existence more than a moment. Partly as a result of necessity and partly as a new method of defense, the Germans developed the "pillboxes," as they were called by the British soldiers. These were concrete redoubts erected in shell holes. They were oftentimes some distance apart and were just about level with the ground, making them in many cases invisible to airmen. Machine guns fairly bristled all over them, and, unless they were destroyed by artillery fire, they were hard problems for infantry to capture. Their great advantage lay in the fact that they did away with the necessity of keeping large quantities of troops in first line trenches where they were most likely to be a prey to the hostile artillery. As the Battle of Flanders progressed the "pillboxes" proved little more effective as a means of defense than the old trench system.



Courtesy of Review of Reviews.

THE YPRES SALIENT

On August 16 the Allies struck again on a nine-mile front north and east of Ypres and carried practically all their objectives with the exception of the right wing, where British soldiers failed to capture the high ground almost due east of Ypres. The impetus of their first assault carried them up to it, but a furious counter attack drove them down again. In the centre the British captured the strongly fortified position of Langemarck and advanced a mile beyond it. On the left the French drove the Germans from the salient between the Yser Canal and Martjevaart and captured the bridgehead at Dreigrachten. Torrential rains, with the resulting softening of the terrain, prevented further operations on a large scale for over a month.

When operations again became possible, the Allies delivered five extremely heavy blows between the middle of September and the middle of October, which drove a big wedge into the German positions. On September 20, an attack began on an eight-mile front between the Ypres-Comine Canal and the Ypres-Staden Railroad. This resulted in the capture of Glencourse Wood, Inverness Copse, Nonne Boshen, Gallipoli, Iberian Farm, and Potsdam Vampir. All these places were named by the Allied troops stationed in front of them. In the centre Veldhoek and part of Polygon Wood were taken and consolidated. On September 26, while smashing on a six-mile front, one-half mile of the German positions were taken, which included Tower Hamlets Spur, the remainder of Polygon Wood and Zonnebeke.

On October 4 General Sir Douglas Haig struck again, this time on an eight-mile front from south of Tower Hamlets to the Ypres-Staden railroad, north of Langemarck. The chief gain of this stroke was the seizure of Passchendaele Ridge as far as Broodseinde. It will be remembered that this ridge was the immediate objective of the Battle of Flanders. A fourth blow, struck on the 9th, gained St. Jean de Mangelaere and Poecappelle for the Allies. Following up his policy of not giving the enemy a chance to reform his lines, General Haig struck the fifth blow of the past month on the 12th. When this attack was halted because of unfavorable weather the British were within 500 yards of the village of Passchendaele. These five blows recovered for the Allies an area of nearly 23 square miles and carried them to the Ypres-Roulers road on the northwest as well as an advance of a mile astride of the Ypres-Menin road. British artillery now dominated the Flanders plain and guns of the largest calibre could effectively shell Roulers, about five miles distant.

The battle was resumed on the 22nd, when the Allies advanced astride the Ypres-Staden railway. The French occupied the southern part of Houthoulst Forest and several fortified farms, which were of stone and well supplied with machine guns. On the 26th the British advanced west of Passchendaele and the French seized Draeibank and several more farms. Part of the Belgian army, which had been thoroughly reorganized, with the aid of the French, captured the Mercken peninsula, formed by canals on three sides, south of Dixmude. They had to advance over two miles of swampy land to achieve this success. On the 30th the British entered Passchendaele, but were almost immediately driven out again by vigorous counter assaults. After a week of heavy bombardment the Canadians retook the town and German defenses 800 yards beyond, and held their gains in the face of furious counter attacks. The British spent the next week in consolidating their gains and in clearing the sides of Passchendaele Ridge.

The Battle of Flanders was now over for the remainder of 1917, excepting for strong "feelers" made by the Germans in the last week of December, when all the Allied nations were expecting them to deliver a heavy stroke somewhere along the Western Front. In summing up the battle, we find that the Allies had failed to drive the Germans from the Belgian coast and that they had failed to force them out of Lille. These were the two ultimate objectives of the battle. They had made important gains from the military point of view, however. They had wiped out the Ypres salient, which, at best, had been only a poor guarantee for the safety of Calais. They were able, from their new positions, to shell Roulers, an important railway junction, which supplied the submarine bases on the Belgian coast. They also hold positions which will ensure them a fair degree of success in an advance over the plains of Flanders in the spring of 1918, and in this way accomplish that which they failed to do in 1917. The Battle of Flanders also proved to the world that the Allies were dominant on the Western Front, and that they could practically take the offensive whenever they wished.

(15) Verdun Again (August-September)

After nine months of comparative quiet, quiet that had lasted since the hammerlike stroke of Pétain on December 15, 16, 17, and 18, 1916, the Verdun front came into the limelight again on August 20, 1917, when the French executed their most important offensive of the month. They started one of their quick thrusts with a brief artillery preparation and a comparatively small objective to be gained. On the above date, after a three-day bombardment, they advanced on both sides of the Meuse River and penetrated a mile and a quarter on an eleven-mile front. They captured Avocourt Wood, Le Mort Homme, Corbeaux, and Cumières Woods, Côte de Talou, Chapneuville, Mormont Farm, Hill 240, and 4000 prisoners. In the next four days smashing blows were delivered which resulted in the capture of Regnéville, Samogneux, Côte de l'Oie and more than 15,000 prisoners. By September 15, the French had recovered more than 100 of the 120 square miles of territory, which the Germans, under the Crown Prince, had seized in their great, but unsuccessful, offensive. They now held all the dominating positions in the Verdun sector and strong German counterthrusts failed to dislodge their lines. They were also in a position to start an offensive from north of Nancy to St. Mihiel, with the fortified city of Metz as the objective.

(16) The Fall of Riga (September-October)

The important city of Riga was added to the list of German conquests in September, 1917. Despite the almost complete demoralization of the Russian armies the Germans were compelled to fight a series of severe engagements before they were able to capture the seaport and the islands guarding the mouth of its harbor. On August 15 Gen. Letchitsky was appointed commander-in-chief of the northern Russian armies to succeed Gen. Klemlovsky. The former reported after the capture of the city that the defenses south of the city were not in a bad condition, but that the artillery the Germans concentrated on this front was vastly superior in number and calibre to that of the Russians. The Germans also outnumbered the Russians in troops. They had close to a quarter of a million on the front from Riga to Friedrichstadt (45 miles), while the Russian forces were reduced to about 60,000 men. The Germans were also vastly superior in the matter of aëroplane service. This enabled them to fly low to the ground and to easily locate the Russian artillery positions.

On August 22 the Germans began an advance from Kemmern, which is between the Aa River and the Gulf of Riga. At the same time they drove the Russians back in the neighborhood of the Tirul marsh region and bombarded the Russian positions north of Dvinsk, on the right bank of the Dwina River. On September 2 they crossed this river at Uxkul, 16 miles southeast of the city of Riga. This enabled them to advance directly on the city along the Mitau-Riga roadway. Towards the end of the same day advanced units entered the city and Gen. Letchitsky withdrew to a prepared line east of the city. He was absolutely unable to even attempt to defend the city with the means at his command. The Germans continued to advance east of Riga. Their line had been extended about 50 miles and the Russians counter attacked and advanced where the German line was the thinnest. On September 21 the Germans renewed the offensive and struck on a 26-mile front, and penetrated to a depth of 6 miles. They captured the city of Jacobstadt, where they secured a vast amount of booty. The Russians counter attacked heavily but unsuccessfully. During the months of November and December the Germans withdrew from most of the area they had conquered after the fall of Riga, and sent a great number of troops to aid the Austrians in the joint offensive against Italy (see *The Great Italian Retreat*, IV, *17*). The kaiser in a speech to his Riga army highly complimented it on the glorious military victory it had gained.

From the strictly military point of view the capture of Riga was of no importance without the occupation of the islands which controlled the mouth of the Gulf of Riga. The overland route from Riga to Petrograd was over 300 miles and was too long a stretch for Germany's waning man power. On the other hand, the capture of Oesel, Dagö, and Moon islands would shorten the distance to Petrograd considerably and enable them to make a combined land and naval attack on the strong Russian naval base at Reval. They set out to accomplish this purpose in October. The reason they did not carry on their operations while advancing on Riga was apparently due to the mutiny in the German navy, reported in the Reichstag by Admiral Cappelle on October 9. On October 13 German forces were landed on Tagcalaket Bay, a northern inlet of Oesel Island, and at Serro on the southern end of Dagö Island. Advancing across Oesel Island, the Germans captured the capital and chief city of the island, Arensburg. The Russian garrisons on both islands were compelled to flee to the mainland to the eastward. In the meantime, the Russian Baltic fleet, which was aiding in the defense of the positions, was locked up in Moon Sound by a superior German fleet estimated to have consisted of fifty war vessels. The Russian battleship, *Slava*, 13,516 tons, and several smaller units were lost in the defense of the gulf. The Germans completely occupied the three islands—Oesel, Dagö, and Moon—and on October 21 occupied a position on the mainland, at Werder, but later voluntarily withdrew. In the meantime, the Russian fleet escaped after inflicting unknown losses on the German fleet (consult NAVAL PROGRESS). The great Austro-German offensive against Italy apparently made the German authorities decide not to make the expected drive for Reval and Petrograd. The latter city was extremely apprehensive of an attack and took preliminary steps to remove the seat of government to Moscow.

(*17*) *The Great Italian Retreat* (*October-December*)

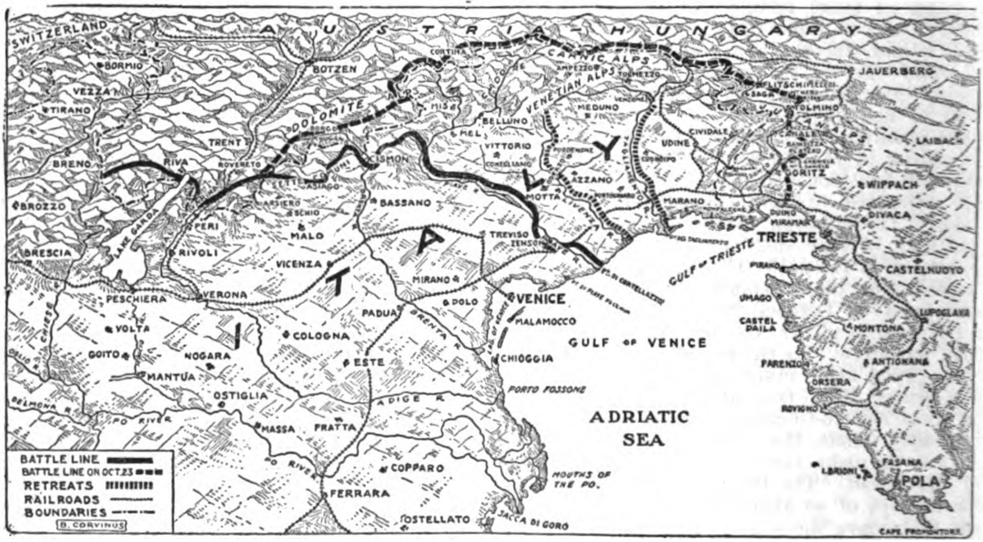
Towards the close of 1917 we find the Germans putting into operation again the same policy of destroying one of her weaker enemies as she had done toward the close of 1915 and 1916. In 1915 it was Serbia, in 1916, Rumania, and in 1917, Italy. The position of the Italian armies was peculiarly vulnerable to the coup, which the Austrian and German high commands had worked out. The strategy was a repetition of that which caused the breakdown of the great Russian offensive at the Dunajec line in 1915.

As has been described above in the sections on the *Italian Spring Offensive* and *Italian Summer Campaign*, the main Italian army was striking on a comparatively narrow front on the Bainsizza Plateau. The entire line of active fighting was scarcely more than 12 or 15 miles long. The attacking force was composed of the flower of the Italian army and all seasoned veterans. The armies protecting its flanks were of unequal strength and were used for different purposes. Those on the upper Isonzo (First Army) and in the Trentino (Fourth Army) were chiefly composed of territorials, i. e., older men who in peace times are held in reserve. There was only a mere sprinkling of seasoned men among them and they had not as yet actually participated in any very heavy fighting. The troops on the lower Isonzo were also veterans, and were pushing forward on the Carso and in the neighborhood of the Hermada Mountains toward Trieste, at the same time that the main army was hurling the Austrians back on the Bainsizza Plateau.

The success of the Italian campaigns had caused the Austrian high command to issue urgent call for help to Germany. The growth of the pacifistic Bolshevik movement in Russia, with consequent impairment of the efficiency of her armies, enabled Germany to bring about 100,000 men and a great quantity of heavy artillery to the aid of her weaker and sorely beset ally. The strategy of the campaign as marked out was sound. It was to strike at the unseasoned troops on the upper Isonzo, break through, and then cut the lines of communication of the Bainsizza and Carso armies, and thus cause their retirement by outflanking them. This task was made easier by the collapse of Russia, a superiority of artillery, the element of surprise, fraternizing of the Austrian and Italian troops, socialistic propaganda, and cowardice, which Gen. Cadorna claimed was exhibited by his troops on the upper Isonzo.

The campaign started when, on October 21, Austro-German batteries of heavy artillery bombarded the Plezzo (Flitsch)-Tolmino front and the northern edge of the Bainsizza Plateau. As the Italian guns were greatly outranged and outnumbered, the Austro-Germans with little difficulty broke through the Italian positions at Plezzo and Tolmino and crossed to the western bank of the Isonzo River. Converging from these points on Caporetto, the Germans opened the way for their outflanking movement by an advance down the Natisone and Judrio River valleys. This move threatened the rear of the second and third armies and compelled them to retire from their positions. The Austrian forces opposing them lost no opportunity to harass this retirement as much as possible. On the 27th, Berlin announced that the Teutonic Allies had captured so far 60,000 men and 500 guns. According to a report from Rome, most of these prisoners were non-combatants used in repairing roads back of the battle fronts. The cause of their capture was the seizure of Monte Matajur, which dominated the Italian rear down the valleys of the two rivers mentioned above. The rapid advance of the Germans and Austrians made the retreat from the Bainsizza and Carso plateaus across hastily constructed bridges over the Isonzo almost a rout. For a long time it looked as though the Italian commanders were going to be unable to extricate their menaced armies. On the 28th, Civadale was taken and thus railway communication with Udine, the seat of the Italian general headquarters. On the same day Gorizia was entered by the Austrians.

On October 30, Udine fell, and by the first of November Austro-German advance guards were on the Tagliamento River. This general retirement jeopardized the fourth Italian army, which was guarding the frontier in the Carnic Alps. They were compelled to abandon the mountain passes and beat a hasty retreat down the streams running into the upper reaches of the Tagliamento and Piave rivers. The Italians, particularly the cavalry, fought valiant rearguard actions to stem the Teutonic hordes and hold the line of the Tagliamento. Berlin announced that up to the time they reached the Tagliamento they had captured 180,000 prisoners and 1500 guns.



From Current History Magazine, New York Times Co.

Map of region of Northern Italy Invaded by Austro-German Armies. Former Battle Front Shown by Dotted Line on the East; Present Front by Black Line North of Venice

The Tagliamento was only held temporarily, until the main Austro-German army arrived. They threw pontoon bridges across the river in scores of places and drove the Italians back to the Livenza, the next river flowing into the Gulf of Trieste parallel to the Tagliamento. Further German reports announced the capture of 250,000 prisoners and 2300 guns. The Livenza offered very little opportunities for resistance and was merely held to enable the completion of the defenses of the Piave River line, 10 to 20 miles further west. This had been a training place for recruits and was protected by modern trenches and other fortifications. French and British infantry and heavy artillery, which were sorely needed, were arriving in ever-increasing numbers. A change was also made at this stage of the retreat in the Italian high command. Gen. Cadorna was removed and was appointed one of the members of the general staff, created by the Supreme War Council (see section *Allied Unity*, IV, *20*). He was succeeded by Gen. Diaz, who was to be assisted by Gens. Badoglio and Giardino. Great preparations were also made to defend the line of the Adige River, still further west of the Piave. This was a very strong defensive line, extending from the mountains to the sea, and was almost incapable of a flanking movement such as had caused the abandonment of the Isonzo, Tagliamento, and Livenza River positions.

The line of the lower Piave held and the strategy of the Austro-German staff was to outflank it by seizing the Asiago Plateau and the line of hills between the Piave and Brenta rivers. This would enable them to debouch onto the Venetian plains with comparatively slight loss to themselves. Several strong attempts were made to cross the lower Piave, some of which were successful, notably at Zenson. All of them were immediately driven back across the river, with the exception of the one at Zenson, which the Teutonic Allies hung on to tenaciously until the beginning of 1918, when a brilliant Italian infantry charge, supported by artillery fire, completely wiped out the foothold. The Austro-Germans were at a great disadvantage because they were unable to bring up their heavy artillery with any degree of rapidity on account of the systematic destruction of railroads by the retreating Italians. The Allied monitors, which had done such effective work in the attack on the Carso, were now used to shell the southern extremity of the enemy line and thus, in a measure, protect Venice. A large area between Venice and the mouth of the Piave was flooded to prevent any crossing of the river near the famous old city. This was done by rediverting part of the waters of the Piave to an old channel, which had been closed up to keep the lagoons and canals of the city from rising too high.

Finding all efforts to force a crossing of the lower Piave futile, the Austro-German armies now concentrated all their efforts on outflanking the lower Piave by striking at the Asiago Plateau, the weakest point of the Italian line. In order to select the strongest defensible line possible the Italians withdrew from the region around the northern end of Lake Garda to the upper reaches of the Piave. They grimly held on to Monte Tomba and Monte Monferiera, which stand like sentinels, guarding the passes to the plains between the Brenta and Piave River valleys. Great masses of Austrians and Germans were hurled at the Italian positions but their rock trenches held firmly. These attacks are comparable to those made by the crown prince during the great drive on Verdun of last year and his efforts on the Chemin des

Dames of this year. The immediate objective of the Central Powers was the line of hills which stretch across the plain between the upper Brenta and Piave. For more than three weeks this mountain range was bitterly contested for. Continuous artillery duels followed by infantry attacks by both sides were of daily occurrence. Although the Italians were forced to give ground their main line held and the Teutonic attempt to reach the Venetian plains in this direction was for the time being foiled.

The first week in December saw a shift in the attack to a point further west. This time the Austro-German forces, under the leadership of Field Marshal von Hoetzendorf, struck between the Brenta and Astico rivers on a four-mile front from Ronchi Valley to Monte Kabalaba. This is approximately the pivot of the Italian retreat, i. e., where the new line was anchored onto the old one. The German attack found the Italiáns poorly prepared to meet it. They were just about to retire to more easily defended positions. From the 5th to the 8th the Germans took an additional 15,000 prisoners, but, strange to say, hurled the Italians back to more easily defended positions. The former line had been an inverted U-shape and now the bulge was driven in and the line made straight. Here again we find a low line of hills, similar to that between the Brenta and Piave, guarding the way to the plains. The Germans hurled great masses of troops against these positions and gradually stormed them, one by one, forcing the Italians ever nearer to a precipitous rout. On December 15 Col Caprille was stormed and 3000 prisoners taken. On December 19 they also stormed Monte Asolone and took 2000 more prisoners. The Austro-German forces were now within four miles of the Venetian plains and the Italian armies on the whole Piave line were in a very precarious situation. Apparently imbued with the knowledge that further enemy successes would imperil their whole country, desperate Italian counter attacks regained the lost positions on Monte Asolone.

In the last week of the year a fresh attempt was made by the Teutonic Allies to break through. A particularly open winter permitted operations long after they would normally have to cease on account of heavy falls of snow. This time they struck at Col del Rosso and Monte Valbella, which guard the head of the Frenzela Valley, which connects with the Brenta Valley. They are in the neighborhood of Monte Sisemol, which had been the scene of a bitter struggle the week previous. Berlin announced the capture of these two heights and 9000 prisoners. The same week saw the use of Allied forces, when the French made important gains on the slopes of Monte Tomba.

As the year 1917 closed, the battle of the Piave was still in doubt. Military experts seemed to agree that the holding of the line was only temporary and that before the winter finally set in or, at least by early spring, the Italian defenders would be compelled to retire to the Adige. A compilation of German reports showed that they had taken nearly 300,000 prisoners and 2700 guns. Besides they had occupied 4000 square miles of Italian territory and were threatening the richest section of Italy, and the very backbone of the munition manufacturing district. The Italian retreat coupled with the complete collapse of Russia made the year a very disastrous one for the Entente Allies. These two things more than offset the gains on the Western Front, the victories in Asia Minor, and the entrance of the United States into the war. Italy is now a liability rather than an asset. She has lost over half of her artillery and at least half of her military stores. France and Great Britain were compelled to detach two armies from the Western Front and send them to the aid of their weaker and almost prostrate ally. The Italian defeat was also used by the Germans as a strong basis for their winter peace negotiations. Consult the *Diplomacy of the War* section of this article.

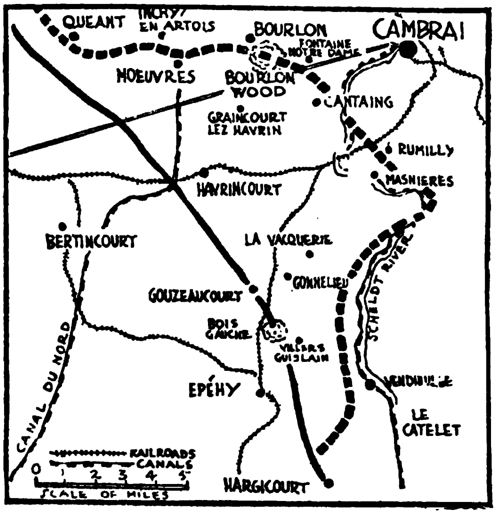
(*18*) *Palestine Campaign* (*October*—)

After several Turkish threats at the Suez Canal and Egypt had come within an ace of succeeding, the British high command determined to take the offensive in that region, and remove, if possible, the danger of further threats. This plan was put into execution at the beginning of 1917, when the British began an advance on Rafa, on the Sinai Peninsula, in January. After bitter fighting this town fell in the early part of February and the British began a slow advance toward Gaza and Beersheba. Their efforts to reach these towns were unsuccessful, and after a severe reverse they were compelled to spend the hot summer months on the Gaza River. When operations again became possible, they began to advance (October) and by the end of the year had won a series of brilliant successes. The offensive was under the command of General Allenby. On October 31 Beersheba was taken in a surprise attack and on November 6 Gaza, near the coast, was captured. Continuing his advance northward, with comparatively little opposition, General Allenby cut the Jaffa-Jerusalem railroad at Ludd and El Ramle, by the middle of November. He followed up this success a few days later by capturing Jaffa, the seaport of Jerusalem. The British now began a movement to encircle the city of Jerusalem in order to cut off its supplies, so that it would not have to undergo what might prove to be an irreparable destructive bombardment. To accomplish this purpose he moved down the Surar River valley and up the Damascus-Beersheba railroad from the point where it intersected the Jaffa-Jerusalem line. All the Turkish positions around the Holy City were taken by storm and as the British closed in it became apparent that the Turks would not risk a siege. The city fell on December 10 and there was general rejoicing throughout the world over its return to Christian hands after being held by the Turks for almost seven centuries. The Turkish forces west and northwest of the city carried on a destructive guerilla warfare until the British got control of all the high ground. General Allenby immediately began to strengthen his position in the vicinity of the Jaffa-Jerusalem railroad by crossing a small stream four miles north of Jaffa and getting control of all the high ground in the neighborhood. Increased activities during the latter part of December presaged a renewal of the drive northward.

The success of British arms in Palestine revived the hopes of the Zionists (see article JEWS AND JUDAISM), who dreamed of a reëstablishment of the Jewish nation in Palestine. The British Government announced on several occasions that it looked with favor on the Zionist movement.

(19) *Battle of Cambrai* (*November-December*)

On November 21 the British started a drive for Cambrai, which for a time threatened to smash the famous "Hindenburg Line" and possibly put an end to the deadlock on the Western Front. After great initial British successes, the Germans started a counter offensive, which almost nullified the British gains. The method of beginning the battle in the immediate neighborhood of Cambrai was unique in the annals of the war. It was made with scarcely any artillery preparation, and its success was due to the great element of surprise. Heretofore great offensive movements had only been made after intense artillery preparation, which has the decided disadvantage to the attacker of letting the enemy know where the blow is about to fall. The attack was made on a 35-mile front from St. Quentin to the Scarpe River, although the chief operations were due west of Cambrai. Huge "tanks" (a British estimate places the number at 500), screened by smoke, plunged through the German barb wire defenses as though they did not exist. Gen. Sir Julian H. G. Byng was in direct charge of the operations. The first day saw an advance of five miles and the capture of 8000 prisoners.



THE BATTLE OF CAMBRAI

The villages of Benvais, La Vacquerie, Ribecourt, Havrincourt, Marcoing, Gouzeaucourt, Graincourt, Anneux, and Noyelles-sur-l'Escaut were captured as well as several fortified farms and forests. Part of Bourlon Wood, the dominating height around Cambrai, and a part of Bullecourt were also taken. Fontaine Notre Dame, three-quarters of a mile from Cambrai, was seized, but was retaken by the Germans on the next day in a fierce counter attack. For the first time since the withdrawal of the Germans after the Battle of the Somme, open fighting, in which the cavalry and "tanks" played a large part, prevailed on the Western Front.

Two days later the British renewed their drive and a bitter struggle ensued near Moeuvres, south of Bourlon Wood, and at Crevecœur, south of Cambrai. The British took a hill dominating the former position, and as a result of the two days' fighting the German grip on Cambrai and Queant was made precarious. Bourlon Wood and village changed hands several times, the British finally being compelled to relinquish the latter after they were almost completely encircled by German troops. Cambrai must have suffered severely as a result of the British shelling from Bourlon Wood.

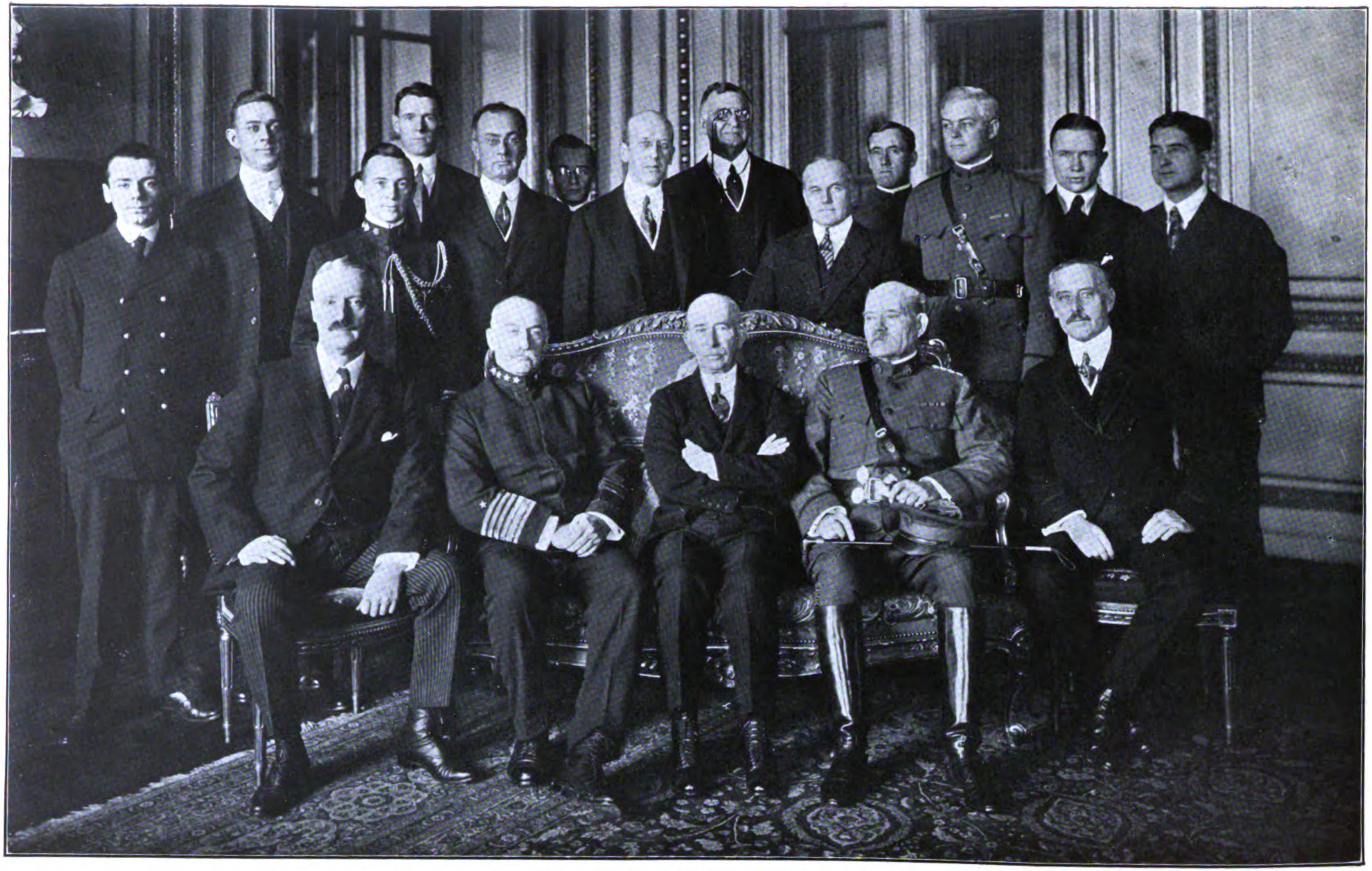
On the last day of November the Germans began a counter offensive against the newly won British positions. The latter had scarcely had time to consolidate them properly. The Germans struck on a 16-mile front north, south, and east of the British wedge. Their object was to flatten the tip of the salient and at the same time crush one or both sides of it and consequently cause a withdrawal. On the north and east they failed to gain, but on the south they entered La Vacquerie and Gouzeaucourt, which had been taken by the British on the first day of their drive. After failing in nine attempts, the Germans seized Masnieres in the tenth. Up to December 4 the Germans claimed to have taken 100 guns and 6000 prisoners. The British War Office admitted the loss of the guns, claiming that they were the only ones captured from the British during the entire year.

The success of the German thrust at the south side of the wedge compelled the British to rectify their lines on the eastern side of it. Consequently they withdrew from Bourlon Wood and abandoned Noyelles-sur-l'Escaut, Anneux, Cantaing, Graincourt, and Marcoing. They had been forced to give up about half of the territory taken in the drive. American engineers, who were working behind the British lines, were caught between the hostile forces when the Germans broke through the British positions. They seized rifles from fallen British soldiers and fought valiantly against the Germans, being especially mentioned by General Haig in his report. Several of them lost their lives. The Germans made a furious attack on December 13, between Bullecourt and Queant, but were unable to break through the British positions. Artillery duels, followed in some cases by infantry attacks, marked the Cambrai front for the remainder of the year. Despite local successes the Germans were unable to penetrate the British lines.

(20) *Allied Unity* (*November-December*)

On November 9 there was a conference held at Rapallo, Italy, the results of which are bound to have a marked effect on the outcome of the war. Those present were Lloyd George, the British Premier; Painlevé, the French Premier; Orlando, the Italian Premier; Lieut. Gen. Sir William Robertson, Chief of the British Imperial Staff; Maj. Gen. Sir Henry H. Wilson; Gen. Smuts; Sonnino, the Italian Foreign Minister; Henry Franklin-Bouillon, the French Minister of Missions Abroad; and Gen. Foch, Chief of Staff of the French War Ministry.

The chief result of this gathering of notables was the creation of a Supreme War Council, the purposes and aims of which are probably best summed up in the first two paragraphs of the agreement signed by the three powers: "With



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AMERICAN COMMISSION TO THE ALLIED WAR CONFERENCE AT PARIS.

Sitting, left to right: Bainbridge Colby, U. S. Shipping Board; Admiral W. S. Benson, Chief of Naval Operations; Colonel E. M. House, the President's confidential adviser; General Tasker H. Bliss, Chief of Staff, United States Army; Oscar T. Crosby, Assistant Secretary of the Treasury. Other members included Vance C. McCormick, Chairman of the War Trade Board; Dr. Alonzo E. Taylor, representing the Food Controller; and Thomas Nelson Perkins, representing the Priority Board.

a view to better coördination of the military action on the Western Front, a Supreme War Council is composed of the prime minister and a member of the government of each of the great powers whose armies are fighting on that front, the extension of the scope of the council to other fronts to be reserved for discussion with the other great powers. The Supreme War Council has for its mission to watch over the general conduct of the war. It prepares recommendations for the consideration of the governments and keeps itself informed of their execution and reports thereon to the respective governments." The first act of the war council was the appointment of an inter-Allied general staff, composed of Gen. Cadorna, representing Italy, Gen. Foch, France, and Gen. Wilson, Great Britain.

In a speech in Paris on November 12, Lloyd George, with brutal frankness, told the reasons for the adoption of the "Rapallo plan," as it was called. He said in part: " . . . The Italian disaster necessitated action without delay to repair it. . . . It is true we sent troops to Saloniki to succor Serbia, but as always they were sent too late. Half the men who fell in the vain effort to pierce the Western Front in September that same year would have saved Serbia, saved the Balkans, and completed the blockade of Germany. . . . 1915 was the year of the Serbian tragedy; 1916 was the year of the Rumanian tragedy, which was a repetition of the Serbian story almost without change. . . . National and professional traditions, questions of prestige and susceptibilities, all conspired to render our best decisions vain. . . . The war has been prolonged by particularism. It will be shortened by solidarity." Premier Painlevé said at the same time, "A single front, a single army, a single nation—that is the programme requisite for future victory."

Lloyd George's speech caused considerable comment throughout England, the chief criticism of it being that it was an attempt to bring military affairs under the control of politicians.

On November 7, Secretary of State Lansing announced the personnel of an American commission which had just landed in London, whose purpose was to hold conferences with the Allies in order to bring about "a more complete coordination of the activities of the various nations engaged in the conflict and a more comprehensive understanding of their respective needs, in order that the joint efforts of the cobelligerents may attain the highest war efficiency." The members of the commission were Col. E. M. House, chairman; Admiral Benson; Gen. Bliss; Assistant Secretary of the Treasury Crosby; Vance C. McCormick, chairman of the War Trade Board; Bainbridge Colby, of the Shipping Board; Dr. Alonzo E. Taylor, of the Food Administration; and Thomas Nelson Perkins, of the Priority Board. On November 18, President Wilson cabled to Col. House that the United States government considered "unity of plan and control" absolutely essential. He also instructed Col. House and Gen. Bliss to represent the United States at the first meeting of the Supreme War Council, which meant that the United States government approved of the "Rapallo plan." The commission returned in December, but the nature or results of its work were not made public until the close of the year, when the recommendations of the commission were published by Secretary of State Lansing. They recommended "that the United States exert all their influence to secure entire unity of effort, military, naval, and economic, between themselves and the countries associated with them in the war." "That the fighting forces of the United States be despatched to Europe with the least possible delay incident to training and equipment." The commission also urged the hastening and extension of the United States shipping plan, by a systematic coördination of resources of men and material.

On December 4 the French foreign office announced that the Supreme War Council had determined to create an Inter-Allied Naval Board whose duties would be similar to those of the Inter-Allied General Staff.

(21) *Completion of Conquest of German East Africa (December)*

When the year 1916 closed, the Allied forces operating in German East Africa had forced the German and native troops back from the coast into the mountainous region south of the great central railroad running from Dar-es-Salaam to Ujiji. During the year 1917 the Allies concentrated their efforts in annihilating the opposing army, which had broken up into several groups who were carrying on a guerilla warfare. They gradually forced them back toward Utete and Utembe Lake, and began a systematic encircling movement. The German forces were unable to get any supplies, as the British controlled the entire coastline, and consequently were not in a position to offer much resistance. On December 3 the British War Office announced that German East Africa had been completely cleared of the enemy. Every German colony was now entirely occupied by Allied forces.

(22) *Complete Collapse of Russia's Armies*

The outstanding feature of the year was the complete collapse of the Russian armies with the consequent elimination of Russia as a vital factor in the war. During the first two years and a half of the conflict the Russian armies had played a tremendous part in lessening Teutonic pressure on other fronts. They had proved as a fighting force that they were considerably superior to the Austrian armies, although they were almost invariably outfought by the Germans. The courage and morale shown by the Russian soldier is all the more to be wondered at when one considers the Germanophile and bureaucratic politicians who were in charge of the government.

With the coming of the revolution, there spread all over Russia a strong undercurrent of pacifism and desire for peace, which gradually undermined the fighting forces of the nation. Throughout the revolution we find the Council of Soldiers' and Workmen's Delegates playing the leading rôle. Even when the governments of Lvoff, Miliukoff, and Kerensky were exercising their greatest powers, this council was announcing to the country that it was the real leader of the revolution, and the safeguarding of its principles against reactionary movements was in its hands. As a result of this assumption of prerogatives, the military discipline, necessary to the successful operations of armies, was swept away. The council took upon itself the sanctioning of all rules and regulations passed by the revolutionary government, concerning the army. Ministers of war resigned because they were unable to efficiently carry out their duties, owing to interference by the council. Commanders-in-chief resigned for the same reason. The death penalty was done away with for military offenses and the soldiers had to approve the orders of their officers before they were carried out.

Socialistic and pacifistic literature was spread broadcast among the soldiers and they were told that the *ancien régime* had made imperialistic treaties with other members of the Entente Allies. Fraternizing and exchange of goods were common occurrences on the entire eastern front throughout the entire year. Owing to Kerensky's personal magnetism, discipline and some semblance of order were restored to the ranks temporarily. It was during this period that the July offensive was carried out by Gen. Brusilov. As has been related above this completely broke down and ended in a rout because of the widespread mutiny among extremely socialistic troops.

When the Bolsheviki came into power (see RUSSIA, *History*), all fighting ceased. The Maximalist party was apparently opposed to war and favored an immediate negotiated peace. They began to demobilize the army, and in December ordered all munition factories to stop the manufacture of war material. Desertions occurred in wholesale quantities and were not followed up by arrest and punishment. During the same month an armistice was signed between the Russian and Rumanian governments and those of the Teutonic Allies.

The collapse of Russia's armies put a double burden on the armies of her other Allies and enabled Germany to withdraw vast quantities of men and material from the Russian front for use on other fronts. The entrance of the United States into the war, in a measure, offset the practical dropping out of Russia.

(23) *Macedonian Front*

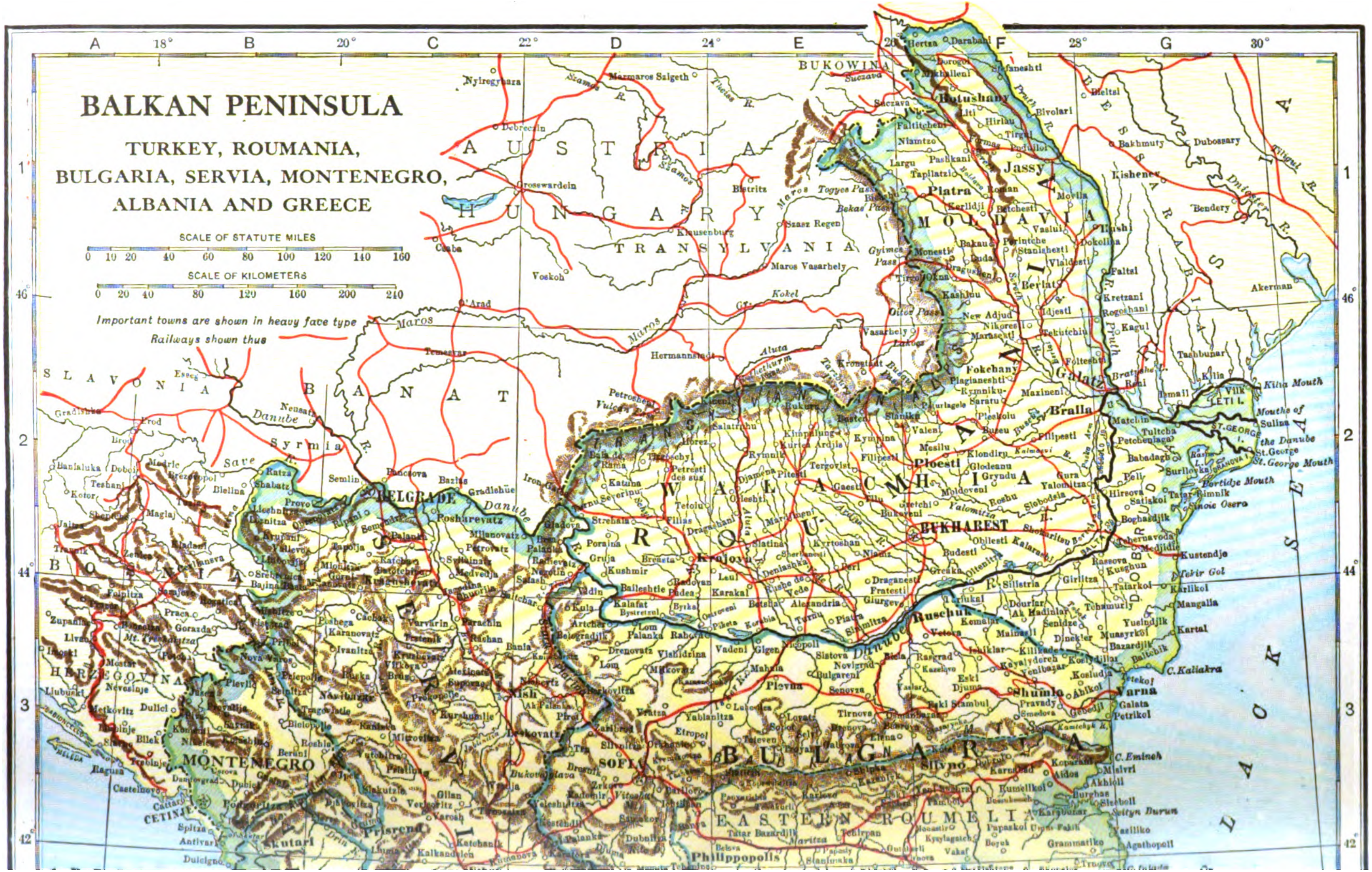
The year 1917 was one of comparative inactivity on the Macedonian front and January 1, 1918, finds the situation there almost exactly the same as on January 1, 1917. The failure of Gen. Sarrail's army to create a diversion to relieve the pressure on Rumania was in a large measure due to the fear of an attack in his rear by Constantine, the pro-German king of Greece. The possibility of the Macedonian Expeditionary Force accomplishing anything worth while was completely destroyed by the total downfall of Russia. His force was not strong enough to meet the combined strength of the now unhampered Bulgarian, Turkish, Austrian, and German forces opposed to him. Up to June spasmodic fighting, generally successful to the Allies, occurred in Albania, where the Italians occupied Cerevoda, Velisest, Osaja, and Cafa (May 31), in the Lake Doiran region, where the British took two miles of Bulgar trenches and several villages, which they were compelled to evacuate later, and in Thessaly, where the French occupied several towns.

The situation in the Balkans was considerably cleared up by the abdication of the King of Greece on June 12 (see *Diplomacy of the War* section of this article and the separate article on GREECE). The ever present threat of an attack in the rear of the Allied army in Macedonia was now removed and the way cleared for a possible advance. The advance could be up the valley of the Tcherna, Vardar, or Struma rivers, with the city of Nish as an objective. This advance was not undertaken, possibly because, as has been suggested above, of the complete collapse of the Russian army, which, perforce, meant the complete collapse of the Rumanian army. Indications of a general readjustment of the Macedonian front were numerous at the close of 1917. Gen. Sarrail was removed as commander-in-chief and the entire front has been comparatively inactive from June to December. Just what changes are to be made on this front have never been divulged, but the most logical one is that it will be abandoned as the scene of a possible offensive. If so, a force just sufficient to hold the Teutonic Allies there in check will be maintained, and thus relieve about 750,000 men for operations elsewhere, possibly in Asia Minor. Part of the defensive army will be made up of the Greek army (about 300,000 men), which has been well trained and equipped since Greece entered the war.

(24) *Estimated Participants and Casualties*

On October 22, 1917, the United States' War Department issued a statement concerning the number of men bearing arms in the great war. The figures are in round numbers and cannot be considered as entirely accurate. They are based on published reports from the various nations engaged in the war and do not include the men enlisted in the navies of the belligerents. According to the War Department's estimate there were at that time 38,000,000 men actually bearing arms. The estimates are as follows: Teutonic allies: Germany, 7,000,000; Austria, 3,000,000; Turkey, 300,000; Bulgaria, 300,000; Entente Allies: Russia, 9,000,000; France, 6,000,000; Great Britain (including colonies), 5,000,000; Italy, 3,000,000; Japan, 1,400,000; United States, over 1,000,000; China, 541,000; Rumania, 320,000; Serbia, 300,000; Belgium, 300,000; Greece, 300,000; Portugal, 200,000; Montenegro, 40,000; Siam, 36,000; Cuba, 11,000; Liberia, 400. To these figures should be added the army of Brazil, which declared war shortly after the above estimate was made. The standing army of Brazil is 32,000 in peace times.

Figures pertaining to casualties are at best untrustworthy. There are so many classifications of casualties that it is hard to actually tell how many men have been actually killed, wounded, and captured. For example, one man might be slightly wounded three or four times in the course of the year and consequently appear on the wounded list four times. The following figures are taken from a New York City daily paper and may be considered fairly accurate, as they were compiled from official lists. The total number of men killed, captured, or permanently incapacitated for fighting, from the beginning of the war to January, 1918, amounted to 15,099,000. While these figures are considerably smaller than those published in the 1916 YEAR BOOK, it must be remembered that they do not include those who were wounded and later able to return to the firing line. The total was roughly proportioned among the belligerents as follows: Teutonic Allies: Ger-



BALKAN PENINSULA

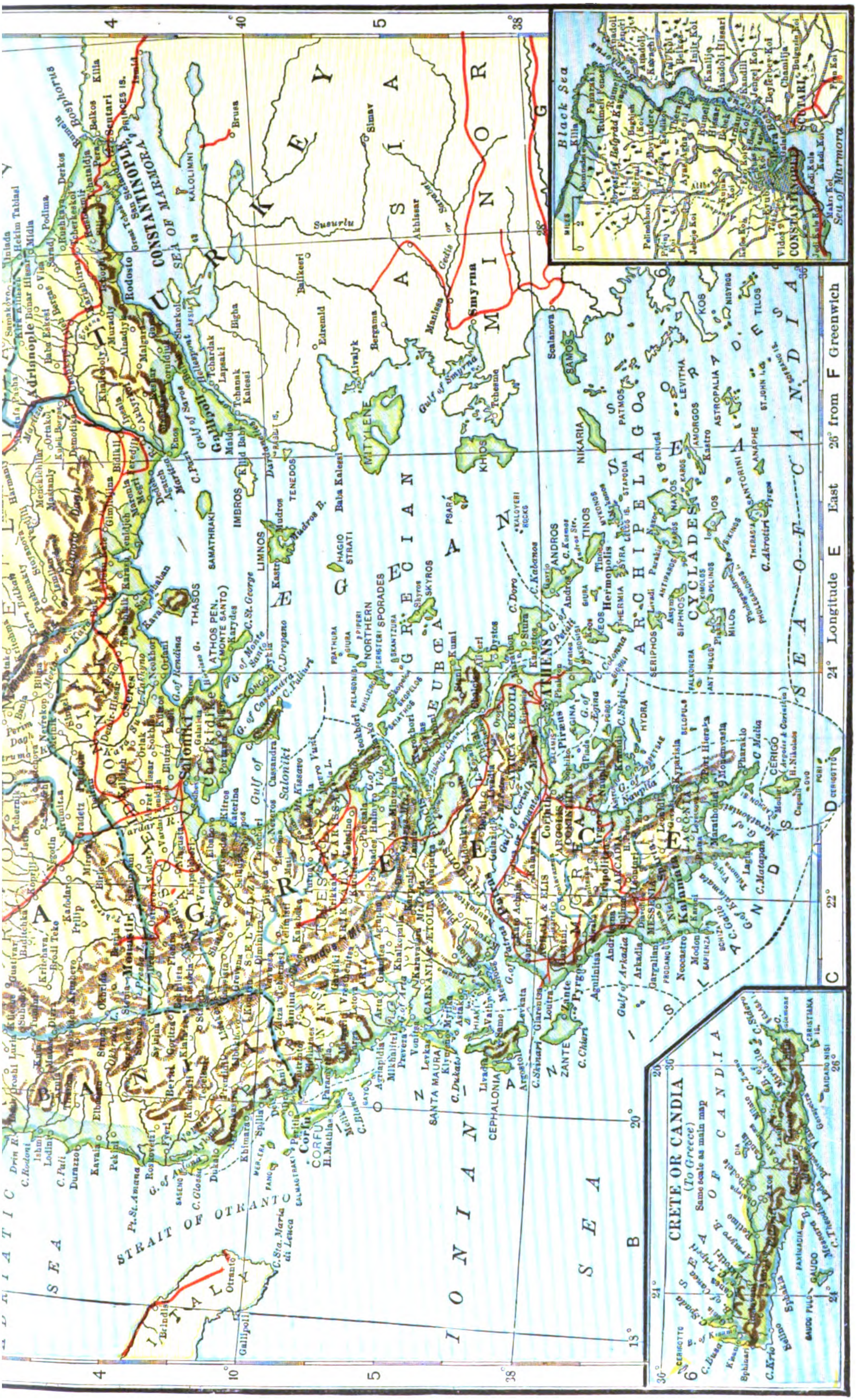
TURKEY, ROUMANIA,
BULGARIA, SERVIA, MONTENEGRO,
ALBANIA AND GREECE

SCALE OF STATUTE MILES

SCALE OF KILOMETERS

Important towns are shown in heavy face type

Railways shown thus


TURKEY
ASIA MINOR
GREECE
ÆGEAN SEA
GRECIAN ARCHIPELAGO
ADRIATIC SEA
IONIAN SEA
SEA OF CANDIA
STRAIT OF OTRANTO
ITALY
CONSTANTINOPLE
SEA OF MARMORA
Black Sea
Bosphorus
Adrianople
Saloniki
Smyrna
Gulf of Smyrna
Athens
Corinth
Corfu
Cephalonia
Zante
Santa Maura
Mitylene
Khios
Samos
Limnos
Thasos
Imbros
Tenedos
Cyclades
Northern Sporades
Eubœa
Cerigo
Brindisi
Otranto
Brusa
CRETE OR CANDIA
(To Greece)
Same scale as main map
Longitude East 26° from Greenwich

many, 4,550,000; Austria, 2,000,000; Turkey, 350,000; Bulgaria, 24,000. Entente Allies: Russia, 4,500,000; France, 2,000,000; Great Britain, 705.000; Rumania, 350,000; Italy, 250,000; Belgium, 120,000; Serbia, 100,000; Montenegro, 30,000.

V. Naval Operations

Battles in Gulf of Riga (October)

The chief naval engagement of the year occurred between the Russian and German Baltic fleets during the occupation of Oesel, Dagö, and Moon islands in October. A description of these naval battles is given under the article Naval Progress.

Minor Naval Losses and Operations

The year 1917 was comparatively quiet on the sea as far as the navies of the belligerents were concerned. No naval engagement of any size developed besides those mentioned above, although there were several minor operations carried on and almost all the countries suffered some slight losses. On January 23 a battle between destroyers occurred in the North Sea, in which Berlin claimed two British destroyers were sunk. London admitted the loss of one vessel. German war vessels carried out several raids on the east coast of England and the coast of France, which caused practically no military damage. Broadstairs and Margate were shelled on February 26, after which the attackers got away unscathed. In April Ramsgate, Calais, and Dunkirk were bombarded. On September 5 Scarborough was bombarded, but not seriously damaged, by a submarine.

On April 8, near the Belgian coast, the Germans lost one destroyer and had another seriously damaged. On the 21st of the same month two German destroyers and two smaller British craft were sunk near Dover. In the early part of June the British sank the S-20 and damaged another destroyer. A few days later, both Germany and Great Britain lost a destroyer in the North Sea, due to the explosion of mines. On October 2, the British cruiser *Drake*, 14,000 tons, was torpedoed and sunk off the northern coast of Ireland. On October 17, two German raiding cruisers attacked a convoy in the North Sea and sank 5 Norwegian vessels, 3 Swedish, 1 Danish, and the British destroyers, *Mary Rose* and *Strongbow*.

On November 3 the British sank the German auxiliary cruiser *Marie of Flensburg*, and ten patrol boats in the Cattegat. On the same day they destroyed a crewless raider off the Belgian coast. This is a vessel loaded with high explosives, which will go off on contact. It is electrically controlled, run by gas engines, and is supposed to be steered into hostile warships. On November 21 a skirmish occurred between German and British light forces in which neither side did much damage. The British pursued the Germans to within thirty miles of the Heligoland Bight. On December 17 German cruisers again raided a convoy in the North Sea and sank 11 ships, including the British destroyer *Partridge*.

In the Adriatic the Allies developed two new and distinctive types of fighting craft. One was an extremely large monitor, carrying the heaviest of naval guns. It was usually towed into position, as it had no motive power of its own. These monitors did particularly effective work during the attack on the Carso and the defense of Venice. The other was a light motor boat, equipped with torpedo tubes. These boats were very fast and of light draft, being designed to sail over the mine fields of Trieste and Pola. In December some of them entered the former harbor and torpedoed two cruisers of the *Wien* type.

The entrance of the United States into the war was almost immediately followed by the active participation of her navy. She took over the patrolling of the Atlantic waters, and in May it was announced that a flotilla of American destroyers was actively engaged in European waters in combating the submarine menace. On October 17 the American transport *Antilles* was sunk on a return trip from France, with a loss of seventy lives. On November 1 another American transport, the *Finland*, was torpedoed, but was able to return to the French port she had just left. On November 5 the *Alcedo*, an American patrol boat in European waters, was sunk with a loss of 21 lives. On the 19th of the same month the American destroyer *Chauncey* was sunk in a collision and 21 lives were lost. On December 6 one of the newest American destroyers, the *Jacob Jones*, was torpedoed and sunk and over 60 men lost their lives.

Submarines and Commerce Raiders

The practical deadlock that existed on the Western Front at the close of the campaigns of 1916 apparently made Germany realize that her desire for victory could not be consummated on the battlefield. Her defeat at the Battle of the Marne and the costly and unsuccessful attempt of the crown prince at Verdun evidently convinced the rulers of Germany that the slogan of the French, "They Shall Not Pass," was an actual reality. They therefore determined to risk everything on a ruthless submarine warfare in order to bring the Allies to their knees. Casting aside all regard for international law and the rights and feelings of neutrals, Germany issued on January 31 a note which prescribed that with certain definite limitations an unrestricted warfare would be waged against all vessels. We know now that the German rulers considered and waived aside the possibility of the United States (the country which would be most affected) entering the war on the side of the Allies. For the contents of the note and its effect on the American people consult the article United States and the War.

Up to the time of the beginning of the intensive warfare, the amount of tonnage sunk during the war varied according to British and German claims. The latter claimed that 4,400,000 tons, of which 3,000,000 were British, had been sunk up to February 1, 1917. The British Admiralty estimate was slightly more than 3,000,000 tons, including all losses. In the first month of the warfare Berlin claimed to have sunk 368 vessels of 781,000 tons. These figures varied widely from those given out at London, which claimed that only 490,000 tons had been sunk. To quote from President Wilson's war message, "Vessels of every kind, whatever their flag, their character, their cargo, their destination, their errand, have been ruthlessly sent to the bottom without warning and without thought of help or mercy for those on board, the vessels of friendly neutrals along with those of belligerents. Even hospital ships and ships carrying relief to the sorely bereaved and stricken people of Belgium, though the latter were provided with a safe conduct through the prescribed areas by the German government itself and were distinguished by unmistakable marks of identity, have been sunk with the same reckless lack of compassion or principle."

Starting with March, the admiralties of the Allied countries began to report the sinkings in a general way, so that it is impossible to gain facts as to tonnage destroyed and vessels sunk. They made weekly reports of the number of vessels over 1600 tons and the number of vessels under 1600 tons sunk. The weekly and monthly losses fluctuated considerably. April, June, and December were high months, while July, August, and September were low months. A conservative estimate of the total tonnage lost during the year would be 6,500,000. No figures are available for the losses of submarines.

The methods of fighting the submarines were many and varied. Small, speedy patrol boats, mounting light guns, the arming of merchantmen, aëroplanes, destroyers, depth bombs, smoke screens, nets, and convoys may be mentioned as some of the more common means of combating the submarine. The use of the indirect method of destroying its effectiveness, by building shipping faster than it could be destroyed, is evidenced by the remarkably rapid increase in shipbuilding in the United States and other countries.

Two more German raiders were active during the year. The famous *Möwe*, commanded by the Count zu Dohna-Schlodien, slipped past the Allied patrols in the North Sea in November, 1916, and returned to port again in March, 1917, after sinking 26 ships of 126,000 tons, and sending two to Germany with prize crews aboard. One of these was the *Yarrowdale*. The property loss is estimated at $20,000,000. The total number of prisoners brought in by the *Möwe* and the two vessels not sunk was 1389. In December, 1916, another raider, the *Seeadler*, escaped the British blockade, and was wrecked in the Southern Pacific in August, after sinking 13 vessels.

VI. Aërial Warfare

The year 1917 marked the ever-increasing importance of the aëroplane as a military asset. New and improved types were produced in greater numbers than ever before. The airplane has been called the eyes of the army and has lived up to this name more and more as the great battles of the year were fought. During the Battle of the Somme and the great German withdrawal, Gen. Haig depended on his air service to find out just what the Germans were doing and where the strategic points of the "Hindenburg Line" were. We find the use of the aëroplane developed probably to its greatest extent during the spring and summer campaigns of the Italians and during their retreat to the Piave. Fleets of 150 or more giant Caproni machines would fly low to the ground and drop bombs on forming troops, lines of communications, and munition dumps, or they would rake the enemy with machine-gun fire.

The great increase in the number and effectiveness of aëroplanes naturally stimulated the discovery and use of methods to counteract their activities. One of the most effective of these was "camouflage." This was the covering of trenches, artillery, and other things of military value with trees, painted scenes, etc., so that it would be hard to distinguish them from the rest of the landscape. A French official picture shows a life-size cow, made of paper, standing alongside of a railroad, running through a field. The proximity of the cow is expected to hide the fact that the field has a railroad running through it. Anti-aircraft guns, capable of throwing a shell effectively two or three miles into the air were also perfected. A gun of this type usually reduced to a marked degree the value of aëroplanes for any kind of work.

It would be almost impossible to describe the individual engagements in the air over the battlefronts. Hundreds of them, spectacular and daring, occurred every week, and the deeds of any one airman did not stand much above those of a dozen others. To give an idea of the aëroplane's activities, the official reports for a few months might be given. In April, 1917, 717 machines were brought or driven down on the Western Front alone, in May, 713, in July, 467, and in September, 704. Accurate figures are not available for losses on other fronts.

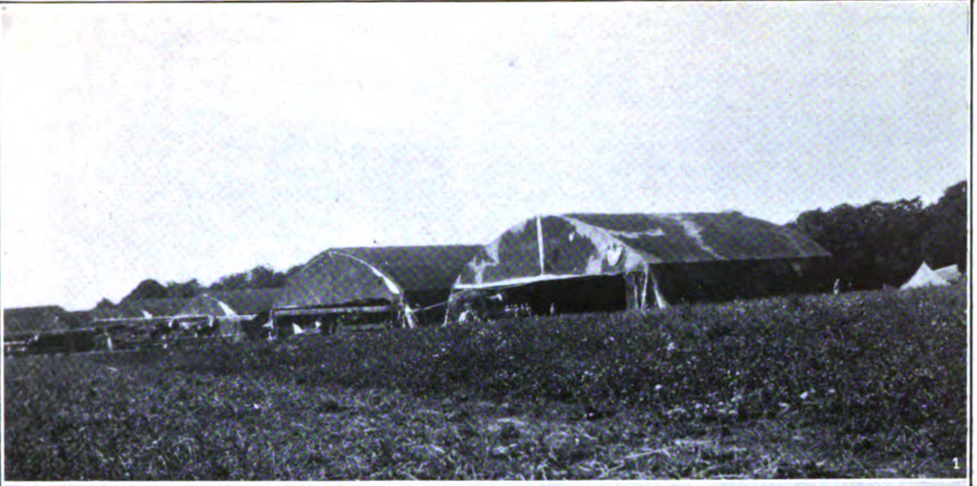
About 25 aërial raids were made on England during 1917, which destroyed a considerable amount of property and killed a great number of civilians. The military damage was practically nil. Probably the most successful raid from the German point of view was that on June 13. It was carried out in broad daylight, and resulted in the death of 97 persons, of whom 26 were school children, and the wounding of 437. The most disastrous from the German point of view was the one made on the night of October 19. At least 11 Zeppelins participated and on their way home five were lost in French territory. One was captured undamaged at Bourbonne-les-Bains. Twenty-seven were killed and 53 wounded as a result of this raid. Since the beginning of the war to January 1, 1918, a compilation of British reports show that as a result of air raids 616 persons have been killed and 1630 wounded in England.

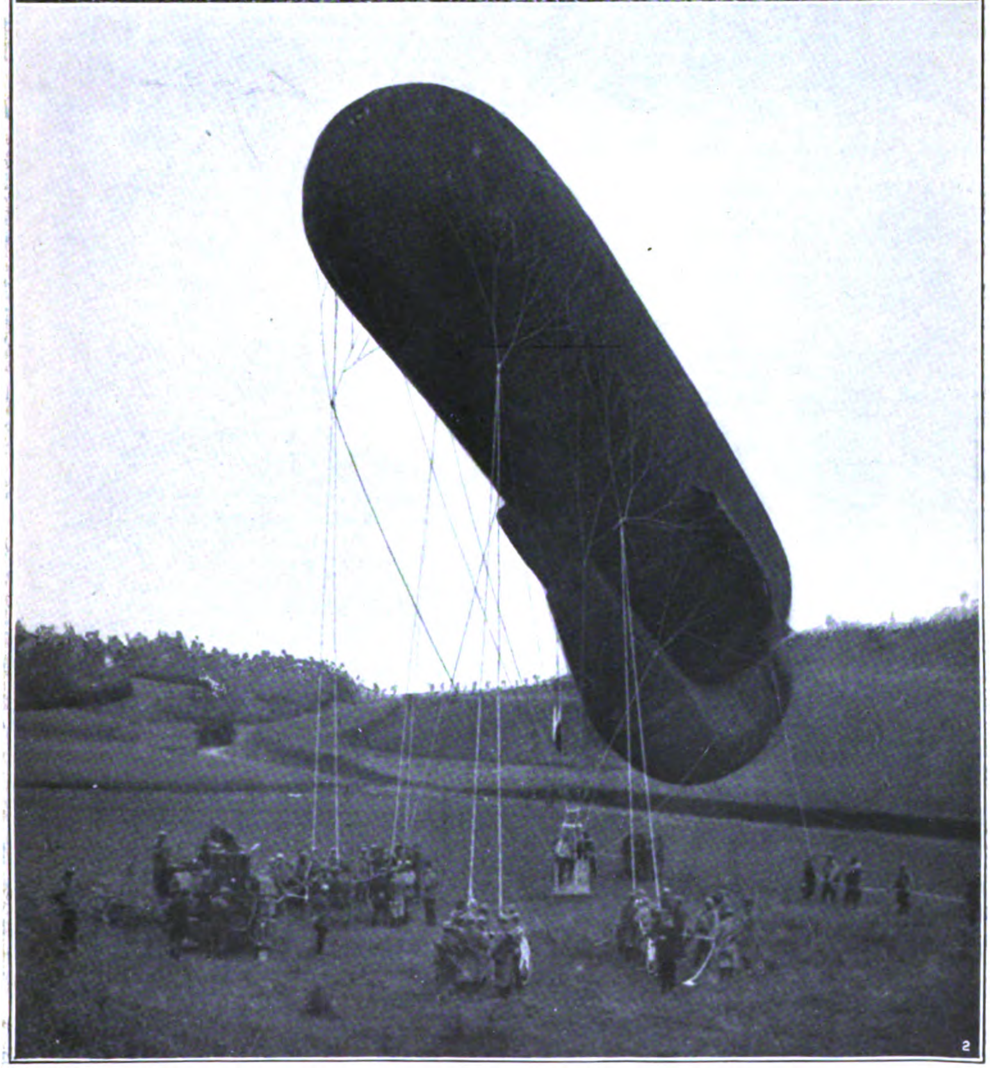
Public opinion in England demanded reprisals but on account of distance, etc., the Government refused to heed the popular clamor. England and France confined their aërial activities to the bombardment of purely military centres, such as the submarine bases at Ostend and Zeebrugge and the Krupp works at Essen.

The consensus of opinion concerning aërial warfare seems to be that aircraft are absolutely essential as aids to other branches. They have done their most efficient work in directing artillery fire, observing enemy troop movements, and in taking photographs of hostile positions. Three years of use has practically decided that the use of Zeppelins in war is a failure, although a French military critic states that Germany is still manufacturing them at the rate of two a month.

After the United States entered the war the Allies felt that as soon as her vast resources were organized to turn out aircraft the supremacy of the air would indubitably be with them. The United States plans to build a standard "Liberty Motor," which combines all the best points of foreign make.

Other information on the war will be found in the following articles: **Agriculture**; **Bat-**





Photographs from Jacques Boyer, Paris

1. HANGARS OF AN IMPORTANT AERONAUTIC STATION AT THE FRENCH FRONT
2. OBSERVATION ("SAUSAGE") BALLOON WITH OBSERVER ABOUT TO ASCEND

tleships and Other War Vessels; Financial Review; Food and Nutrition; Food Control; International Peace and Arbitration; Jews and Judaism; Military Surgery; Military Progress; Naval Progress; Red Cross; Relief for War Victims; Shipbuilding; Shipping; Socialism; Submarine Operations; Submarines; United States and the War; Woman Suffrage; Women in Industry; in the sections entitled *History*, under Albania, Austria-Hungary, Belgium, Bulgaria, France, Germany, Great Britain, Greece, Italy, Russia, Turkey. See also articles on various industries affected by the war. For books relating to the war besides those mentioned below, see Literature, English and American, articles on French, German, Italian, Scandinavian, and Spanish Literatures; also the article Philosophy.

Bibliography. For a fairly extensive critical bibliography of the war, the reader is referred to the New International Year Book for 1915, pp. 726-729; for a supplementary list, the New International Year Book for 1916, p. 811, may be consulted. Among the more recent books on the war the following are of timely interest:

Causes. Woodrow Wilson, *Why We Are at War* (New York), a reprint of the president's addresses to Congress, etc.; G. W. Prothero, *German Policy Before the War* (ib.); K'ung Yuan Ku'suh, *The Judgment of the Orient* (ib.); Gustave Le Bon, *The Psychology of the Great War* (ib.), translated by E. Andrews; Count Ernst zu Reventlow, *The Vampire of the Continent* (ib.), translated by George Chatterton-Hill; A. H. Granger, *England's World Empire* (Chicago); Jacques Bainville, *Italy and the War* (New York), translated by Bernard Miall; David J. Hill, *The Rebuilding of Europe* (ib.).

Diplomacy. André Chéradame, *The Pan-German Plot Unmasked* (New York); John W. Burgess, *America's Relations to the Great War* (Chicago); David Starr Jordan, *Alsace-Lorraine* (Indianapolis); Ian Hay, *Getting Together* (Garden City); Edmund von Mach (editor), *Official Diplomatic Documents Relating to the Outbreak of the War* (New York).

Military. E. Y. Priestman, *With a B. P. Scout in Gallipoli* (New York); Arthur Conan Doyle, *A History of the Great War* (ib.); Stanley Washburn, *The Russian Advance* (Garden City); C. Snouck, *The Revolt in Arabia* (New York); Frederick Palmer, *My Second Year of the War* (ib.); Bruce Bairnsfather, *Bullets and Billets* (ib.); C. D. Winslow, *With the French Flying Corps* (ib.); J. R. McConnell, *Flying for France* (Garden City); Count C. de Souza, *Germany in Defeat* (New York); H. W. Allen, *The Unbroken Line* (London); H. E. Brittain, *To Verdun from the Somme* (New York); Frederic Coleman, *With Cavalry in the Great War* (Philadelphia); Jules Destrées, *Britain in Arms* (New York).

Political, Economic, and Social. Phillippe Millet, *Comrades in Arms* (New York); Boyd Cable, *Grapes of Wrath* (ib.); H. L. Reed, *Serbia, A Sketch* (Boston); Bertrand Russell, *Why Men Fight* (New York); J. B. Pratt, *Democracy and Peace* (Boston); Emile Boutroux, *Philosophy and War* (New York), translated by F. Rothwell; Roland Hugins, *The Possible Peace* (ib.); E. A. Victor, editor, *Canada's Future* ——— (ib.); H. G. Wells, *Italy, France, and Great Britain at War* (ib.); Donald Hankey, *A Student in Arms* (ib.); I. F. Marcosson, *The War After the War* (ib.); A. N. Hyamson, *Palestine* (ib.).

WARRENDER, Sir John Scott. A British naval officer, died in London, January 8, 1917. He was born in Scotland in 1860, second son of the sixth baronet Warrender of Lochend, East Lothian, whom he succeeded in 1901. Entering the navy as a cadet at thirteen, he early saw active service with the naval brigade in the Zulu war, and received a medal with clasp for gallantry at the battle of Ginghilovo. During the China war in 1900 he was flag captain to the rear admiral of the China squadron. While commander-in-chief of the East India Station (1907-09) he was promoted to rear admiral and in 1913 to vice admiral. Meanwhile he had been in command of the second cruiser squadron. When the European war opened, he had been commander of the second battle squadron since 1912. This post he retained till 1916, when he was appointed commander-in-chief at Plymouth. Illness forced his resignation before the end of the year. Admiral Warrender received the K.C.V.O. in 1911 and the K.C.B. in 1913.

WAR REVENUE ACT. See Liquors; Financial Review; Taxation; and United States.

WARSHIPS. See Battleships; Submarines.

WASHINGTON. Population. The population of the State in 1910 was 1,141,990 and on July 1, 1917, it was estimated to be 1,597,400.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	41,000	1,517,000	$2,458,000
	1916	38,000	1,406,000	1,406,000
Wheat	1917	1,855,000	29,218,000	56,391,000
	1916	1,590,000	37,635,000	53,818,000
Oats	1917	292,000	11,241,000	9,106,000
	1916	275,000	14,300,000	7,293,000
Potatoes ..	1917	79,000	9,875,000	9,085,000
	1916	60,000	9,900,000	9,702,000
Hay	1917	808,000	*a* 1,778,000	35,560,000
	1916	800,000	1,920,000	26,496,000

a Tons.

Mineral Production. The value of the gold, silver, copper, lead, and zinc mined in Washington in 1917, according to the estimate of the United States Geological Survey, was about $2,238,000, an increase of 9 per cent over the value in 1916. There was a decrease in the production of gold, silver, copper, and zinc, but an increase in that of lead. This increase and the higher prices of metals in 1917 gave the output a value slightly above that of 1916, which was $2,048,350. Strikes at the Canadian smelters at different times during the year caused a curtailment of shipments from Washington, especially from the Republic and Chewelah districts. The plant at Trail, B. C., which owns and operates several mines at Republic, was idle in December. The Northport Smelting and Refining Co., however, operated a lead plant throughout the year and received much of the siliceous ore from Republic.

The mine production of gold decreased from $577,655 in 1916 to about $486,000 in 1917. The mine output of silver decreased to about 257,000 ounces, or over 23 per cent. The value of the output was about $208,000. Most of this silver came from copper ore mined in the Chewelah district, and a large part of the remainder from siliceous ores mined in the Republic district. The ore output of both districts was less than in 1916. The copper output decreased to about 2,000,000 pounds, valued at $607,000. The output of copper ore and concentrates would have been much greater if the smelters had been able to receive the ore. The lead output increased to over 9,000,000 pounds, valued at about $824,000, representing an increase of nearly 4,000,000 pounds in quantity, and $450,000 in value.

There was a marked decrease in the zinc output in 1917, for the Great Western and Last Chance properties ceased operations in 1916. The ore shipped from the Lead Zinc property at Metaline Falls, however, produced more than a million pounds of spelter. Part of the ore was shipped to eastern zinc smelters and part was treated in the electrolytic plant at Trail, B. C.

TRANSPORTATION. The total railway mileage of the State on July 30, 1915, the latest for which statistics are available, was 8022. This includes mileage of all kinds. The railroads having the longest mileage were: The Great Northern, 1196; the Oregon and Washington, 992; Chicago, Milwaukee, and St. Paul, 583; the Northern Pacific, 1955.

FINANCE. The report of the State treasurer for the biennial period October 1, 1914, to September 30, 1916, showed a balance on hand on October 1, 1914, of $750,656. The total receipts for the period were $6,963,403, and the disbursements were $6,269,548, leaving a balance on hand on September 30, 1916, of $1,444,510.

EDUCATION. The total school population in 1917 was 310,333. The total enrollment was 251,612, with the average daily attendance of 193,092. The number of male teachers were 1946 and of female teachers 7546. The average yearly salary of male teachers was $894.18 and that of female teachers was $656.72. The total expenditure for school purposes in 1915-16 was $14,333,342.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include the Western State Hospital at Fort Steilacoom, the Eastern State Hospital at Medical Lake, the Northern State Hospital at Sedro-Woolley, the Institute for the Feeble-Minded at Medical Lake, the State Soldiers' Home at Orting, Soldiers' Colony at Orting, the Washington Veterans' Home, the State School for the Deaf at Vancouver, the State School for the Blind at Vancouver, the State Penitentiary at Walla Walla, the State Training School for Chechilas, the State Reformatory at Monroe, and the State School for Girls at Grand Mount.

POLITICS AND GOVERNMENT. On April 18, the authorities of the army arrested the local officers of the Industrial Workers of the World on the charge of inciting strikes in the lumber and fruit industries, and preaching sedition.

War activities and enthusiasm were keen in the State during the year. Of the first ships launched of the United States emergency fleet, two were launched in Seattle, one in Grays' Harbor in the State of Washington, and the others at San Diego, Cal. The largest cantonment was established at Camp Lewis, near Tacoma. The beet sugar industry was greatly increased during the year in the Yakima Valley. Twelve million pounds were produced, and it is believed that at least thirty million will be produced next year. It is believed that within two or three years the Northwest will be entirely self-supporting as regards sugar.

LEGISLATION. Among the more important measures passed at the legislative session of 1917 are those noted below. Laws pertaining to judicial procedure were amended in some details. Provision was made for the drawing of alternate jurors in a trial for felony where the judge is of the opinion that the trial is likely to be a protracted one. The eight-hour law for men was amended so that it is a misdemeanor for a man to work over eight hours in the mines. The Workingman's Compensation Law was amended in unimportant details. An injured employee is given the choice of a physician, and a board was established to fix fees, consisting of the chief medical advisor of the Compensation Commission, one employer, and one employee. A general codification of the laws relating to the waters of the State was authorized. The banking laws were amended and deposits guarantee funds were established.

STATE OFFICERS. Governor, Ernest Lister; Lieutenant-Governor, Louis F. Hart; Secretary of State, L. M. Howell; Treasurer, W. W. Sherman; Auditor, C. W. Clausen; Superintendent of Education, Josephine Corliss Preston; Attorney-General, W. V. Tanner; Adjutant-General, Maurice Thompson; Commissioner of Public Lands, Clark V. Savidge; Commissioner of Insurance, H. O. Fishback—all Republicans except governor, who is a Democrat. Maurice Thompson, office appointive.

JUDICIARY. Supreme Court: Chief Justice, O. G. Ellis; Associate Justices, Mark A. Fullerton, J. Stanley Webster, S. J. Chadwick, E. N. Parker, George E. Morris, John F. Main, O. R. Holcomb, Wallace Mount. Clerk, C. S. Reinhart.

WASHINGTON, UNIVERSITY OF. A co-educational State institution at Seattle, Wash. In the fall of 1917 there were 2379 students and 185 members of the faculty; student enrollment fell off 50 per cent over the preceding year. The library contained 83,831 volumes. The university owns timber land worth $3,000,000. In 1917 a school of business administration was organized with an entirely new faculty, Carleton H. Parker, professor of economics, being made dean. A school of library economy was also organized. The university was founded in 1861. President, Henry Suzzalo, Ph.D.

WASHINGTON AND LEE UNIVERSITY. A non-sectarian institution for the education of men at Lexington, Va. In the fall of 1917 there were 381 students and 26 members of the faculty; 6 professors entered government service. The library contains approximately 55,000 volumes. Productive funds in 1917 amounted to $952,172 and the income therefrom to $57,446. The university was founded in 1783. President, Henry Louis Smith, Ph.D.

WASHINGTON UNIVERSITY. A non-sectarian co-educational institution at St. Louis, Mo. In the fall of 1917 there were 1936 students and 226 members of the faculty. The library contained 163,419 bound volumes and 60,196 pamphlets. During the year the university received a gift of $1,166,666 for the medical department. Productive funds in 1917 amounted to $11,983,282 and the income therefrom to $512,773. The university was founded in 1853. Chancellor David F. Houston resigned in 1917 and Frederic A. Hall was appointed to succeed him.

WATERHOUSE, JOHN WILLIAM. An English painter, died in London, February 10, 1917. The son of a painter, he was born in Rome, Italy, in 1849. He went to England to study in the Royal Academy Schools, but was largely self-taught. By 1885 he had been elected Associate of the Royal Academy, where he had exhibited since 1874, and by 1895 Academician. He became known chiefly by his pictures illustrative of myths or legends, such as "The Magic Circle," "Consulting the Oracle," "St. Eulalia," and "The Lady of Shalott," all in the Tate Gallery, London. Others fine in color and decorative quality include "Hylas and the Nymphs" (Manchester), "Echo and Narcissus" (Liverpool), "The Soul of the Rose," and "Thisbe." His work partakes in character of both the pre-Raphaelite and Burne-Jones tendencies.

WATER PURIFICATION. See WATER-WORKS.

WATER-WORKS AND WATER PURIFICATION. In the field of water-works construction the two greatest events of the year were the completion of the Catskill Aqueduct and the provision of water-supplies for the various army cantonments. The aqueduct, which has been described in previous issues of the YEAR BOOK, will eventually bring 500,000,000 gallons of water daily to New York City from storage reservoirs in the Catskill Mountains. It was under construction for a dozen years, and with its various dams and reservoirs, has cost about $177,000,000. J. Waldo Smith was chief engineer of the work and at times had under his direction a staff of a thousand men—not including those at work for the contractors. See AQUEDUCTS.

CANTONMENT WATER-SUPPLIES. The first step in providing water-supplies for the sixteen national army cantonments, each to house 40,000 men, was to prepare general specifications. These were drawn after careful deliberation by a group of the most eminent hydraulic engineers in the country, acting in an advisory capacity to the committee on emergency construction and engineering of the General Munitions Board. With these engineers were two representatives of the National Board of Fire Underwriters and an engineer from the quartermasters' division of the army, who had had much experience in designing water-supplies for army posts. An allowance of 55 gallons per man per day was made, which included 15 gallons apiece for horses or mules, or 50 gallons net per man. This was about 80 per cent more water per man, on the average, than was allowed in the British, French, Belgian, German, or Canadian cantonments. After these American camp water-supplies went into use they proved ample and in a few cases the consumption was kept down to 30 gallons a day. An additional supply was required at one camp on account of the use of 500,000 to 600,000 gallons a day for steam heating. The per capita figure given was for average use. Provision was made, by storage or otherwise, to supply 2.85 times the average, within three minutes' notice, for a period of one hour. The specifications called for pressures of 60 to 85 pounds per square inch.

At each camp, careful studies were made of available sources of supply and the best were chosen. A variety of sources and modes of supplies resulted. In some cases a supply was bought from a near-by municipal plant. To secure quick delivery and facilitate laying, wire-wound wood stove pipe was extensively used. About 70 per cent of mileage was of wood instead of cast iron, the average cost of the wood being about 60 per cent that of iron. Owing to the use of wood and the density of population of the camps the cost of the water-supplies for 16 cantonments was less than $11 per capita, or about a fifth the per capita cost of the average municipal water system. Even more remarkable was the fact that while the time usually allowed for planning and building city water-works to supply 40,000 people was three years, the cantonment water-works, under most difficult conditions as to materials, transportation, and labor, were planned and built in a little over three months.

REFORESTING WATER-WORKS DRAINAGE AREAS. Gathering grounds for city water-supplies drawn from surface sources are often and wisely bought by the cities to protect their supplies from contamination. Up to spring planting time in 1917, the Conservation Commission of New York State had supplied 3,600,000 seedlings and transplants to some 30 different water-works in the State. About 3,200,000 of this stock were pine About 30 per cent of the stock went to New York City and 20 per cent to Rochester. The City of New York, through its Board of Water-Supply, has planted more than 2,000,000 small trees around and near the Ashkokan and Kensico reservoirs. Some of this stock was raised in its own nurseries. The varieties included Norway spruce, arbor vitæ, Scotch, red, white, Austrian, Jack, and bull pine.

As the result of a campaign started in 1917 by the Pennsylvania forestry commissioner, 26 water-works in the State named ordered 446,000 seedlings from the State nursery. The New Haven (Conn.) Water Co. has established the policy of planting 350,000 trees a year. Since it began keeping records, nine years ago, it has spent $37,000 in forestry work, including planting and improvement cutting, and has made a profit of $9000.

WATER PURIFICATION. With increasing speed the cities of the country which draw their water-supplies from surface sources were establishing filtration plants. Among those which had not done so chlorination was becoming the rule. Chlorination is also commonly practiced even where water is filtered, since at slight expense it provides an added safeguard—continuous insurance—against water-borne typhoid. In fact, there may be practically no extra expense, for with chlorination in use a more rapid rate of filtration or a reduction in coagulant is often feasible. Liquid chlorine is displacing hypochlorite as a chlorinating agent. For new filter installations, rapid or mechanical rather than slow sand filters were now generally employed. In a paper read before the New England Water-Works Association in September, George A Johnson reviewed this history and status of mechanical filters: The first municipal rapid filter was built at Somerville, N. J., in 1885. At that time there were only a few slow sand filters in the United States. At the beginning of 1917, there were in the United States 682 rapid sand filter plants on city water-works, supplying 13,411,000 people, or 74 per cent of the 18,293,000 people then being furnished with filtered water, while 54 slow sand filters were supplying 4,882,000 people. Since 1910, the population of the United States supplied with filtered water has increased 69 per cent and the number of filter plants 81 per cent.

The introduction of filtered water had cut down the typhoid rate in many American cities. A notable instance of this was recorded by Charles B. Burdick in *Engineering News-Record* of September 6, 1917. The city was Niagara Falls, N. Y. For more than ten years prior to 1912, there had never been less than 22 typhoid deaths in the city and from that up to 55 deaths a year. For the period 1899 to 1911, the average annual typhoid death rate was 131 per 100,000. The entire water-supply of the city had been filtered since the middle of 1912. The drop in typhoid was immediate. In 1915 there was not a single typhoid death in the city. For the four years following complete filtration, the average typhoid death rate was 11 per 100,000, while in the three years ending with 1916 it was only 5.3.

Good bacterial results were being obtained in 1917 from a combined mechanical filtration and ultra-violet-ray water treatment plant put in operation late in 1916 at Henderson, Ky. The plant had a daily capacity of about 4,000,000 gallons and was the first municipal plant in the world to treat water under pressure by means of the ultra-violet-ray. An illustrated description of the plant appeared in *Engineering News-Record*, November 20, 1917. A leading work in the bibliography for the year was Ellms, *Water Purification* (New York City).

WEATHER BUREAU. See Meteorology.

WEIGHTS AND MEASURES. On November 1, 1917, there went into effect the Federal Standard Container Act, entitled "An Act to fix standards for Climax baskets for grapes and other fruits and vegetables, and to fix standards for baskets and other containers for small fruits, berries, and vegetables, and for other purposes," approved August 31, 1916 (39 U. S. Stats. at Large, p. 673). This act prescribes definite sizes for baskets, used for fruits and vegetables, specifying the dimensions and capacity of the various containers permitted. Three standard sizes were provided for general use, two quarts, four quarts, and twelve quarts, while there were established the dry half-pint, dry quart, and multiples of the dry quart as standards for containers for small fruits, berries, and vegetables, the capacities for which are fixed in cubic inches. After November 1, 1917, it was made unlawful to ship anything from State to State in baskets or containers that did not conform to the law, or to sell or to ship containers of non-conformable size. The statute further contains specified tolerances and variations for the different containers.

A meeting of manufacturers was held at Birmingham Chamber of Commerce in October to consider the establishment of a local or district Bureau of Standards of Length, and there was unanimous approval of a scheme presented on this occasion. It was the intention to make the bureau a department which would aim at the highest class of scientific work, recognizing the needs of the Midland industries for cheap as well as accurate sets of standardized gauges. The declared object was not to make the proposed bureau a manufacturing concern, but a centre of scientific work on behalf of local industry which at the outset would be confined to the testing and setting up of length gauges. The management and general control of the proposed work was to be placed in the hands of a body composed of scientific and business men, and the condition was laid down that no standard would be recommended for general adoption until it had been tested in the shops.

WELCH, James. An English comedian, died in London April 10, 1917. He was born in Liverpool in 1865 and made his first appearance on the stage at the Globe Theatre, London, playing with Wilson Barrett in *The Golden Ladder*. Among the more notable plays in which he had comedy rôles were Shaw's *Widowers' Houses*, *Arms and the Man*, and *You Never Can Tell*, and Ibsen's *An Enemy of the People* and *John Gabriel Borkman*. But his greatest success, and a remarkable one, was as Sir Guy de Vere in *When Knights Were Bold*, which was first produced in Nottingham in 1906, ran in London during 1907-08, then was taken on tour for three years, and has been revived several times. Under the management of Sir Charles Wyndham he appeared at the Criterion Theatre, London, in *Betsy*, *My Friend the Prince*, and other plays, while those in which he supported Barrett included *The Sign of the Cross*, *Claudian*, *The Silver King*, and *Romany Rye*.

WELLESLEY COLLEGE. A non-sectarian institution for the education of women at Wellesley, Mass. In the fall of 1917 there were 1612 students and 138 members of the faculty. The library contained 90,927 volumes. For the year ending June 30, 1917, the productive funds amounted to $2,727,159 and the income therefrom to $151,380. The college is planning for the erection of a group of new academic buildings, Mr. Ralph A. Cram being the supervising architect. The college was founded in 1875. President, Ellen Fitz Pendleton, LL.D., Litt.D.

WELLS, Charles. An English Orientalist, died October 4, 1917, in Brighton, England. He was born in London in 1838 and was educated in that city at King's College, where he won the Turkish prize in 1860. He was professor of English in the Imperial Naval College at Constantinople, in 1870-74, was appointed professor of Turkish in King's College, London, in 1889, and Oriental translator to the British foreign office in 1892. His published works include: *Ilm-Tedbir-i-Muek* (1860), an essay on Turkish political economy; *Mehemet, the Kurd, and Other Tales from Eastern Sources* (1865); *A Practical Grammar of the Turkish Language* (1880); *The Literature of the Turks* (1891); and a revised and enlarged edition of Redhouse's *Turkish Dictionary* (1880).

WESLEYAN METHODIST CONNECTION IN AMERICA. This denomination starting in Michigan in 1841 under the name of Wesleyan Methodists, was organized in Utica, N. Y., in 1843, as an anti-slavery and non-episcopal church. At the close of the Civil War many who had joined the new church, seeing that slavery was abolished, returned to the churches to which they had originally belonged or joined new churches. The denomination emphasizes the Wesleyan doctrines of justification and holiness as essential to salvation. According to *The Methodist Year Book* for 1918, this denomination had in 1917, 840 ministers; 1912 lay preachers; 20,669 members; 491 Sunday schools; 2523 officers and teachers; 21,211 Sunday school scholars; and 675 churches. There are foreign missions in Sierra Leone, Africa, and in India. There are three schools of college grade: At Houghton, N. Y.; Central, S. C.; Miltonvale College, Miltonvale, Kan.; Theological School, Fairmount, Ind.

WESLEYAN UNIVERSITY. A non-sectarian institution for the education of men at Middletown, Conn. In the fall of 1917 there were 402 students and 43 members of the faculty; of the latter 5 are in the military service of the government. The library contains 110,000 volumes. Productive funds in 1917 amounted to $2,495,500 and the income therefrom to $129,812. The university was founded in 1831. President, William Arnold Shanklin, LL.D., L.H.D.

WESTERN AUSTRALIA. A State of the Commonwealth of Australia. It extends from the Indian Ocean to the Northern Territory and South Australia at long. 129° E. It is the largest State of the Commonwealth. The estimated area is 975,920 square miles, which is about 32.8 per cent of the area of the Commonwealth and more than fourteen times the area of the State of Missouri. The estimated population at the end of 1916 was 309,188 (160,334 males, 148,854 females), as compared with 319,859 (173,309 males, 146,550 females) at the end of 1915 and 282,114 at the 1911 census. These figures are exclusive of full-blooded aboriginals. The capital is Perth, which with suburbs (including Fremantle) had 106,792 inhabitants in 1911. There were reported for 1916 8599 births, 3106 deaths, 20,965 arrivals, 35,286 departures.

The legislative power is exercised by a parliament of two houses, the Legislative Council and the Legislative Assembly. The Council consists of 30 members, elected for six years; the Assembly, 50 members, elected for the duration of parliament, which is limited to three years. Woman suffrage was adopted by an act of 1899. Maj. Gen. Sir Harry Barron retired as governor late in 1916, and was succeded in 1917 by Sir William Grey Ellison Macartney, who was transferred from the governorship of Tasmania. Premier, H. B. Lefroy (June, 1917). See AUSTRALIA.

WESTERN RESERVE UNIVERSITY. A non-sectarian institution of learning at Cleveland, Ohio. It was founded as Adelbert College in 1826 and now comprises this college as well as a college for women and several professional departments. In the fall of 1917 there were 3165 students and 340 members of the faculty; students and members of the faculty in the national service in 1917 numbered 310. The library contained 129,000 volumes. Productive funds in 1917 amounted to $3,610,129 and the income to $163,567. Gifts amounting to $450,000 were received in 1917. Courses in military training and tactics were included in the curriculum of Adelbert College and military training was made compulsory. President, Charles Frankling Thwing, D.D., LL.D., Litt.D.

WEST POINT. See UNITED STATES MILITARY ACADEMY.

WEST VIRGINIA. POPULATION. The population of the State in 1910 was 1,221,119, and on July 1, 1917, it was estimated to be 1,412,602.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	884,000	25,020,000	$42,534,000
	1916	740,000	22,570,000	22,796,000
Wheat	1917	315,000	4,410,000	9,570,000
	1916	305,000	4,422,000	7,075,000
Oats	1917	143,000	3,861,000	3,050,000
	1916	140,000	3,220,000	2,061,000
Potatoes ..	1917	65,000	7,475,000	9,867,000
	1916	48,000	4,224,000	6,674,000
Hay	1917	790,000	*a* 1,003,000	21,163,000
	1916	825,000	1,270,000	18,415,000
Tobacco ...	1917	11,300	*b* 9,040,000	2,712,000
	1916	14,100	12,690,000	1,904,000

a Tons. *b* Pounds.

MINERAL PRODUCTION. The production of coal in the State in 1916 amounted to 86,460,127 net tons, valued at $102,366,092, an increase compared with 1915 of 9,276,058 tons, or 12 per cent in quantity, and of $27,804,743, or 37 per cent in value. Practically every district in the State shared in the increase. The car supply was adequate in the first half of the year, but was generally short in the last quarter. There was a shortage of labor in practically all parts of the State.

The production of petroleum in the State in 1916 was 8,731,184 barrels, valued at $21,914,080, compared with 9,264,798 barrels, valued at $14,468,278 in 1915. The State held seventh place as an oil producing State. These figures showed a decrease of 6 per cent in quantity, but an increase of 51 per cent in value.

West Virginia leads all the States in the value of its natural gas productions, recording in 1916, $47,603,396, nearly twice the value of Pennsylvania, the next State in importance.

TRANSPORTATION. The railway mileage of the State in 1916 was 3740. The railways having the longest mileage were: The Baltimore and Ohio, 1127; the Norfolk and Western, 452; Western Maryland Railway Company, 198; the Virginian Railway Company, 119.

FINANCE. According to the State treasurer's report, the receipts for 1917 were $10,548,854; the expenditures $10,158,531. At the beginning of the year there was a balance of $4,021,844, and at the end of the year $5,088,976. The State has no bonded debt.

EDUCATION. The total school population of the State in 1916 was 419,890. The total enrollment was 313,873, with an average daily attendance of 223,889. There were 4482 male and 5842 female teachers. The average yearly salary of teachers was $332.41.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions include the Western State Hospital, the Spencer State Hospital, the Huntington State Hospital, the State Tuberculosis Sanatorium, the Welch State Hospital, No. 1, McKendree Hospital, No. 2, the Fairmont Hospital, No. 3, the West Virginia Penitentiary, the West Virginia Industrial School for Boys, the West Virginia Industrial Home for Girls, the West Virginia School for the Deaf and Blind, the West Virginia Colored Orphans' Home, and the West Virginia Children's Home.

LEGISLATION. Among the more important measures passed at the legislative session of 1917 are those noted below. A measure was passed providing for the better protection of judges against personal violence. This provides that in case any person assassinates, or attempts to assassinate, or feloniously assaults any judge, the governor shall offer a reward of not more than $10,000 for the arrest of such persons, and may employ assistance for such purpose to the amount of not more than $5000. The county courts are also authorized to offer a reward for not more than $5000 for the same purpose. The election laws were amended, and a scheme for double election boards, one to receive the votes and another to count them, was put into effect. The department of mines was authorized to make regulations necessary to secure safe and sanitary working conditions in the mines of the State. Amendments were made to the laws relating to the drainage of lands. The legislature of the State, in February, refused to make provision for the payment of the State's portion of the Civil War debt, which it has been ordered by the Supreme Court of the United States to pay to Virginia. It is resolved by the legislature not to pay the money until the court has heard the testimony of the late legislators on the motion of a writ of mandamus which compels the State to pay its portion of the debt. The sum in question amounts to $12,393,929.

STATE OFFICERS. Governor, John J. Cornwell; Secretary of State, Houston Goff Young; State Superintendent of Free Schools, M. P. Shawkey; Auditor, John S. Darst; Commissioner of Agriculture, James H. Stewart; Attorney-General, E. T. England; Treasurer, William S. Johnson; Adjutant-General, John C. Bond; Commissioner of Insurance, J. S. Darst, ex-officio—all Republicans except governor, Dem.

JUDICIARY. Supreme Court of Appeals: President, L. Judson Williams; Associate Judges, George Poffenbarger, William N. Miller, Charles W. Lynch, Harold A. Ritz; Clerk, W. B. Mathews.

WEST VIRGINIA UNIVERSITY. A co-educational State institution at Morgantown, W. Va. In the fall of 1917 there were 917 students and 118 members of the faculty. A. C. Callan was elected professor of mining engineering to succeed E. N. Zern, resigned. C. H. Winkler was elected full professor in charge of the work under the Smith-Hughes Bill and Paul Rouzer was elected assistant professor of agricultural education. Theodore Zucker, professor of physiological chemistry, and H. M. Gould, assistant in anatomy and neurology, were added to the faculty of medicine. A. C. Fleshman was made assistant professor of education. The library contains 62,000 volumes. Productive funds in 1917 amounted to $115,104 and the income therefrom to $6000. From the estate of Lawrence A. Reymann, the university received in 1917 a valuable farm of 900 acres in Hardy County and with it valuable live stock and farm equipment. Under university management the farm was put on a paying basis and is the leading institution of its kind in the State. The university was founded in 1867. President, Frank Butler Trotter, LL.D.

WHEAT. The wheat crop of the world in 1917 was below the annual average, which is about 3,825,000,000 bushels. This was especially significant in view of the fact that the world's crop of 1916 had been unsatisfactory and that there was little or no surplus. While complete statistics were not available, the production of sixteen countries of the northern hemisphere reporting to the International Institute of Agriculture at Rome was nearly 15 per cent below the average for the five years 1911-15, and also more than 1 per cent under that of 1916. Only five of these countries reported a production above the average of the five-year period mentioned. These were Spain producing 140,921,000 bushels, the United Kingdom 63,748,000 bushels, British India 378,781,000 bushels, Japan 26,501,000 bushels, and Tunis 6,955,000 bushels. The production and area of British India were the highest on record for that country.

The production of the United States as estimated by the Department of Agriculture at the end of the year, was 650,828,000 bushels, of which 232,758,000 bushels were spring wheat and 418,070,000 bushels winter wheat. The total area was 45,941,000 acres, of which 18,511,000 acres were in spring wheat and 27,430,000 acres in the fall-sown crop. The winter wheat area was much reduced by losses from winterkilling, as in the fall of the preceding year 40,534,000 acres were sown. This placed the winter wheat area below that of 1916 which was 34,709,000 acres, and also below the average for the five years, 1911-15. The spring wheat area was nearly a million acres greater than the area of 1916, and only 450,000 acres under the five-year average. The area sown to winter wheat in 1917 for the 1918 crop was estimated at 42,170,000 acres, the leading States being Kansas with 9,479,000 acres, Oklahoma with 3,264,000 acres, and Nebraska with 3,135,000 acres. The average farm value on December 1, 1917, was 200.9 cents per bushel, as compared with 160.3 cents the year before, and on this basis the total value of the crop was $1,307,418,000. The corresponding figures for winter wheat were 202.9 cents per bushel and $848,372,000 total crop value, and for spring wheat 197.2 cents per bushel and $459,046,000 total crop value. These values for spring and winter wheat separately or combined were unprecedented.

It was estimated that the 1917 crop of the United States, on the basis of a per capita consumption 10 per cent less than the normal, would assure a surplus of nearly 70,000,000 bushels, while the average surplus for the years 1907-13 was 108,844,000 bushels. During the fiscal year ended June 30, 1917, the United States imported 24,924,985 bushels of wheat and exported 203,578,700 bushels. The wheat production of Canada for this year was estimated at 231,730,000 bushels on 13,513,650 acres, the average yield per acre being about 15¾ bushels, as compared with 17 bushels in 1916. The production included 17,816,000 bushels of winter wheat and 213,914,000 bushels of spring wheat. The quality of the wheat was good.

The international commerce and the domestic trade of countries was subjected to control by belligerent as well as neutral governments. In most instances the exportation of wheat and wheat products was prohibited or so regulated that supplies in general passed from a country to its dependencies or *vice versa*. Among the nations allied against the central European powers the surplus wheat countries furnished supplies to the importing countries of the group and stores were also transferred, especially in Rumania, by conquest. Many countries also enacted laws regulating milling processes to avoid possible losses of food material. Italy, for instance, fixed the yield of flour at 85 per cent of the weight of the wheat, or at 51 pounds per bushel and allowing only the removal of bran.

The fixation of prices was a general rule and in most instances was continued from the preceding years of war conditions. Germany in March, 1917, fixed the price at $1.64 per bushel, and offered a premium of 39 cents per bushel for delivery before August 1, of 26 cents before September 1, and 13 cents before October 1, of 1917. In Austria the price was fixed at $2.20 per bushel in August and a premium of 11 cents per bushel was offered for delivery before November 1, 1917. The requisition price in France was fixed at $2.62 per bushel in July, and in Great Britain in August at $2.13. Other European countries, including some not engaged in the war, fixed the price even higher than the figures here mentioned.

During the year the United States Food Administration established the price for the 1917 crop at $2.20 per bushel for No. 1 Northern Spring wheat at Chicago, $2.17 at Minneapolis, and $2.30 at New York, with similar variations for other wheat markets of the country and with prices on a relative basis for other grades and classes of wheat. Ocean freight rates for wheat were the same as for corn (q.v.). See AGRICULTURE; AGRICULTURAL LEGISLATION; FOOD CONTROL.

WHEATLESS DAYS. See FOOD CONTROL.

WHEATLEY, HENRY BENJAMIN. A British literary scholar, died in London, April 30, 1917. He was born in Chelsea in 1838 and was privately educated. At 23 he was appointed clerk to the Royal Society, an office he held for eight years, and from 1879 to 1908 he was assistant secretary of the Society of Arts. Mr. Wheatley was prominent in many learned organizations, such as the Early English Text Society, of which he was honorary secretary and for many years treasurer. At various times he was president of the Samuel Pepys Club and the Bibliographical Society, prior of the Johnson Club, and chairman of the Council of the Shakespeare Association. His publications relating to Pepys included *Samuel Pepys and the World He Lived In*, a new edition of *Pepys' Diary* (1894-99), and *Pepysiana*. Other of his books are: *Round About Piccadilly and Pall Mall*, *How to Form a Library*, *Literary Blunders*, *Historical Portraits*, *The Story of London*, *Hogarth's London*. He also edited the *Diary and Correspondence* of John Evelyn and other works. Durham University gave Mr. Wheatley an honorary degree of D.C.L.

WHISKEY. See LIQUORS.

WHITE PINE BLISTER RUST. See BOTANY, *Plant Diseases*.

WHOOPING COUGH. Ruckle of Grand Rapids, Wis., has examined the lingual tonsil in 43 cases of whooping cough that have come under his notice and found in every case a decided enlargement of this gland, with or without other throat symptoms. It is a well known clinical fact that inflammation and enlargement of the lingual tonsil may be responsible for stubborn, long continued coughs, and that appropriate local treatment generally brings about a cure. It is possible therefore that Ruckle's observations may result in the formulation of a new and important therapeutic aid for the cure or relief of this disease. A careful study of the value of pertussis vaccine was made by Luttinger, of the New York City Department of Health, both from the prophylactic and curative standpoint.

WILLIAMS COLLEGE. A non-sectarian institution for the education of men at Williamstown, Mass. In the fall of 1917 there were 434 students and 61 members of the faculty; at the time of the declaration of war in 1917 there were 514 men enrolled in the college and at the end of the year 287 of these were in government service, as were also 17 members of the faculty, including the president of the institution, Henry A. Garfield, who is United States fuel administrator. The total number of alumni and students in service in 1917 was 910. Volumes in the library number 89,747. Productive funds in 1917 amounted to $2,506,006 and the income therefrom to $251,791. Frederick C. Ferry, for fifteen years dean of the college, accepted the presidency of Hamilton College in 1917. Williams College was founded in 1793. Chairman of the faculty *pro tempore*, Professor H. D. Wild.

WILSON, T. WOODROW. See UNITED STATES; UNITED STATES AND THE WAR; WAR OF THE NATIONS, *Diplomacy of the War; Naval Operations.*

WINDWARD ISLANDS. The British West Indian colonies of St. Lucia, St. Vincent, and Grenada; together with the Grenadines, attached partly to Grenada and partly to St. Vincent. Each colony retains its separate institutions, but the three are united for administrative purposes under one governor. See the articles under the separate titles.

WINE. See LIQUORS.

WINTER, WILLIAM. An American author and one of the best known dramatic critics of his time. He was born in Gloucester, Mass., on July 15, 1836, and died on June 30, 1917. He was graduated from the Harvard Law School in 1857, but immediately entered upon a literary career. In 1859 he became dramatic critic of the *Saturday Press* (New York City) and from 1861 to 1865 held the same position on the New York *Albion*. From 1865 to 1909 he was dramatic critic of the New York *Tribune*, and became widely known not only for his critical articles but for his biographical notes on actors, reminiscences, verse, and his sketches of English scenery and historic localities. In 1916 a testimonial was tendered him by players and playgoers in New York City. His writings include: *Henry Irving; Shakespeare's England; The Stage Life of Mary Anderson; Gray Days and Gold; Old Shrines and Ivy; Shadows of the Stage; The Life and Art of Edwin Booth; The Life and Art of Joseph Jefferson; Brown Heath and Blue Bells; Other Days of the Stage; Old Friends; Poems; Life and Art of Richard Mansfield; The Wallet of Time; Shakespeare on the Stage; Vagrant Memories.* He also edited the works of George Arnold; John Brougham; Fitz-James O'Brien; and *The Shakespearean and Miscellaneous Plays of Edwin Booth.*

WIRELESS STATION, SAYVILLE, L. I. See UNITED STATES AND THE WAR.

WISCONSIN. POPULATION. The population of the State in 1910 was 2,333,830, and on July 1, 1917, it was estimated to be 2,527,167.

Agriculture. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	1,918,000	42,196,000	$68,779,000
	1916	1,690,000	60,840,000	55,973.000
Wheat ...	1917	239.000	5,327,000	10.761,000
	1916	188,000	3,315,000	5,304,000
Oats	1917	2,250,000	99,000,000	65.340,000
	1916	2,200,000	81,400,000	41,514.000
Potatoes .	1917	307,000	34,998.000	31,498,000
	1916	290,000	18,630,000	20,036.000
Hay	1917	2,703.000	*a* 4,595,000	79.494,000
	1916	2,600,000	4,420,000	51,272,000
Tobacco .	1917	48.300	*b* 45,885,000	8,030.000
	1916	43,900	55,753,000	6.969,000

a Tons. *b* Pounds.

Mineral Productions. Wisconsin ranked fifth among the States in the production of iron ore in 1916, being surpassed only by Minnesota, Michigan, Alabama, and New York. The total production in 1916 was 1,304,518 gross tons, compared with 1,095,388 tons in 1915. There were shipped from the mines of the State in 1916 1,529,459 gross tons valued at $3,644,542, compared with 1,125,269 tons, valued at $2,188,012 in 1915, an increase of 36 per cent in quantity and 67 per cent in value.

The value of the mined output of lead and zinc in 1916 was $15,643,138 compared with $10,486,212 in 1915. The total metal content of the lead produced was 3043 short tons, valued at $419,934 and of zinc 56,803 short tons, valued at $15,223,204 in 1916.

Transportation. The total railway mileage in the State on December 31, 1916, was 7597. The railways having the longest mileage were: Chicago and Western, 2168; Chicago, Milwaukee, and St. Paul, 1796; Minneapolis, St. Paul, and Sault Ste. Marie, 1352.

Finance. According to the report of State treasurer for 1917, the total receipts were $20,108,636. The expenditures during the year were $20,204,731. The balance at the beginning of the year was $3,698,278, and at the end of the year $3,602,184. The State has no bonded debt.

Education. The school population of the State in 1916 was 801,456. The enrollment was 458,102, with an average daily attendance of 371,494. The number of teachers was 16,288. The expenditure for city schools was $8,700,000; for rural schools, $4,240,000; for graded schools, $2,170,000; for village schools, $2,970,000; for the University of Wisconsin, $2,500,000; for normal schools, $1,115,000; for continuation schools, $733,000. The total expenditures were $22,718,000.

Charities and Corrections. The charitable and correctional and penal institutions of the State include the following: The State Hospital of the Insane at Mendota, the Northern Hospital for the Insane at Winnebago, the School for the Deaf at Delavan, the School for the Blind at Janesville, the Industrial School for Boys at Waukesha, the Wisconsin State Prison at Waupun, the State Public School at Sparta, the Home for the Feeble-Minded at Chippewa Falls, the State Reformatory at Green Bay, the State Tuberculosis Sanatorium at Wales, the Hospital for the Criminal Insane, at Waupun, Tomahawk Lake Camp, the Milwaukee Hospital for the Insane at Wauwatosa, and the county asylums for the chronic insane.

Politics and Government. The Senate, in May, voted to expel Senator Frank Raguse from the Milwaukee district, on account of an offensive and disloyal speech made by him. The vote for expulsion was practically unanimous. This action is in accordance with the Wisconsin constitution, which provides that each House of the legislature may expel a person for contempt, or disloyal behavior, by a two-thirds vote. Mr. Raguse, a German by birth, charged the American government with having plotted the destruction of the *Maine* in order to bring on the Spanish-American War, and declared that the same spirit was evident at the present day. Upon his refusal to sign a prepared retraction of his assertions, he was expelled.

Senator La Follette was the storm centre throughout the year for his opposition in Congress and outside, to the government war measures (see United States, sections on *Congress*; and United States and the War). As a result of an address made in St. Paul in September, a movement was started to have him expelled from the Senate. In obedience to public sentiment, a commission was formed in Congress to pass upon the charges of disloyalty. No action had been taken by the commission at the end of the year. On October 21 Senator Paul O. Husting was accidentally shot and killed while on a duck hunting trip at Rush Lake, Wisconsin. His successor had not been chosen at the end of the year.

Legislation. Among the more important measures passed by the legislative session of 1917 are those noted below:

The laws relating to criminal procedure and the conduct of trials were amended. Provision was made for requiring the attendance of the witness at the trial of an action in another State, Territory, or country, of a person who is in the State of Wisconsin, but only if the laws of such other State, territory, or country contain similar provisions as to trials in Wisconsin.

The granting of a marriage license to any person with certain diseases was prohibited.

The State offices were authorized to take possession of the food supplies of the State upon the payment of a just compensation. The taking over of warehouses and other storage facilities was also authorized. Provision is made for seizing buildings, railroads, and other equipment or supplies useful for military purposes.

A moratorium, limited to men in the military and naval service, provided for the waiving of the statutes of limitations as applied to the bringing of actions by men in the service and for the continuance of actions against them.

The commission form of government was abandoned in the State.

Provision was made for the voting of citizens absent on military or naval service; the law also applies to those who are sick or physically disabled, and so unable to attend the polls.

Several acts looking to the safety of the public on highways were passed. It was required that warning signs were to be erected at the crossings, and provision was made for the removal of means of identification from stolen automobiles.

Measures were passed for the prevention of monopolies and unfair discrimination in the buying and selling of commodities, especially of food products.

It was made a misdemeanor to issue trading stamps as an inducement to the purchase of goods of various sorts.

Laws relating to insurance were amended in important details. A commission was created to study the question of social insurance.

The banking laws of the State were amended.

Amendments were made to the laws relating to health and sanitation.

STATE OFFICERS. Governor, Emanuel L. Philipp, Rep.; Lieutenant-Governor, Edward F. Ditmar, Rep.; Secretary of State and Auditor, Merlin Hull, Rep.; Treasurer, Henry Johnson, Rep.; Adjutant-General, Orlando Holway; Superintendent of Education, C. P. Cary; Commissioner of Agriculture, C. P. Norgord; Commissioner of Insurance, M. J. Cleary, Rep.

JUDICIARY. Supreme Court: Chief Justices, John B. Winslow; Associate Justices, Walter S. Owen, Robert G. Siebecker, James C. Kerwin, Aad John Vinje, Marvin B. Rosenberry, Franz C. Eschweiler; Clerk, Arthur A. McLeod.

WISCONSIN, UNIVERSITY OF. A co-educational State institution located at Madison, Wis. In the fall of 1917 there were 4043 students and 705 members of the faculty, the student enrollment being classified as follows: college of letters and science, 2776; school of engineering, 510; college of agriculture, 578; law school, 77; medical school, 108; school of music, 81; library school, 31. Seventeen per cent of the members of the faculty of the preceding year were in war service. There are 248,000 bound volumes in the library and 51,000 pamphlets. The students of the university also have access to the State Historical Library, the State Law Library, and the Legislative Reference Library, aggregating 297,000 bound volumes and 203,000 pamphlets. Endowment funds amounted to $698,302 and the income from productive funds was $34,705. A standing University Research Committee was established to work in coöperation with the National Research Council. Foreign language was changed from a required to an elective study in both the colleges of agriculture and in engineering. Courses in ordnance and in wireless and wire telegraphy were instituted. The university was founded in 1848. President, Charles R. Van Hise, LL.D.

WOLHYNIC FEVER. See VOLHYNIC FEVER.

WOMAN'S CHRISTIAN TEMPERANCE UNION, NATIONAL. The Union held its forty-fourth annual convention at Washington, D. C., on December 2-7, 1917. There was a large attendance and great enthusiasm was shown in support of the campaign plans adopted for national constitutional prohibition. These included special services to be observed by local unions, appeals to senators and representatives, election activity for those State legislators favoring the ratification of the Federal prohibition amendment, contributions to the campaign fund, educational campaigns, coöperation with friendly associations and societies of different denominations, the aid of State W. C. T. U. papers for national prohibition; and close coöperation with the government in its war measures, especially by the circulation of war-time pledges, thereby helping the cause of abstinence from alcoholic liquors at a critical period in the nation's history. A large gain in membership was reported, thirty-two States having met the test of net gain. The National Committee on Patriotic Service was very active during the year in furthering nation-wide prohibition as a war measure, grouping its activities in ten divisions and working according to a carefully arranged and comprehensive programme. In her address before the convention Anna A. Gordon, the president, stated that the prohibition honor roll of 1917 included the District of Columbia, Indiana, Utah, New Hampshire, New Mexico, Alaska, and Porto Rico. The officers for 1917 were: President, Anna A. Gordon; corresponding secretary, Frances P. Parks; recording secretary, Elizabeth P. Anderson; treasurer, Margaret C. Munns.

WOMAN'S PEACE PARTY. See INTERNATIONAL PEACE AND ARBITRATION.

WOMAN SUFFRAGE. While the war effectually checked some movements for social reform and reconstruction, it has greatly expedited others. Among the latter none seems to have benefited more than the demand for extension of the franchise to women. This result was due in a general way to the very widespread advance of democratic movements throughout western nations; votes for women constitute an important step toward more complete political democracy. But it has been due more specifically, especially in Canada and England, to the great part women have played in the war. In this country some importance also must be attached to the open and honest espousal of the cause by numerous men of prominence and the more perfect generalship of the Woman Suffrage Party; the latter's leaders learned lessons from every defeat and were skillful in adopting the methods of successful campaign managers.

The notable achievements in the United States were the accession of New York to the list of equal suffrage States and the advancement of the amendment to the Federal Constitution. The equal suffrage States are as follows: Wyoming (1869); Colorado (1893); Utah and Idaho (1896); Washington (1910); California (1911); Oregon, Arizona, and Kansas (1912); Alaska (1913); Montana and Nevada (1914); New York (1917). In addition partial voting privileges are had in seventeen other States, seven of which, as indicated below, granted privileges in 1917.

Outside the United States the progress was even more marked. In Great Britain the enfranchisement of 6,000,000 women was all but completed. In Canada every province but Quebec gave votes to women (see CANADA). In France the Chamber of Deputies favored bestowing the municipal franchise on women. In Russia the revolutionary parties favored equal suffrage rights for men and women. In Finland twenty-four women elected in 1916 to the Diet exercised their privileges in 1917. In Norway women not only received extended voting rights, but were made eligible for election to public offices. In Denmark women in 1917 for the first time voted on an important question of state policy, namely, the cession of the Danish West Indies to the United States. In several Swiss Cantons suffrage laws were proposed and discussed in 1917. In Sweden, where the municipal suffrage is already possessed, the agitation for full voting rights continued. Even in Italy, Austria, Hungary, and the South American republics there were evidences of increased discussion.

Federal Amendment. In December, 1915, was introduced in both Houses of Congress the so-called Susan B. Anthony amendment to the Constitution. This would grant full and equal suffrage to women by adding to the Fifteenth Amendment which prohibits the infringement of the right to vote "on account of race, color, or previous condition of servitude" the words "or sex." In order to become effective this amendment must be approved by a two-thirds vote in each House of Congress and by majority votes in the legislatures of three-fourths of the States. It is provided that if a State legislature votes against the amendment it may reconsider its vote, but if it votes in favor it may not reconsider. On September 15, Senator Jones of New Mexico, chairman of the Senate Committee on Woman Suffrage, reported favorably on the amendment. In the House the Rules Committee voted in favor of the establishment of a committee on woman suffrage; and on September 24 this was done by a vote of 181 to 107. On the convening of Congress in December efforts were made to prevent the reference of the amendment to this committee but on the eighteenth by a two-thirds vote this was done. It was also agreed by the Committee on Rules that the matter should be brought to a vote on January 18, 1918. This resulted in 274 votes for to 136 against the amendment. The Democrats cast 104 votes for and 102 against; the Republicans 165 for and 33 against; there were 5 scattered votes for and 1 against.

A sensational feature of the year was the arrest of the so-called "picketers" near the White House who carried banners upbraiding the president for not supporting the amendment.

New York. The most conspicuous American achievement was the outcome of the popular referendum in New York State. By a vote of 674,006 in favor to 585,016 against, the men of New York State granted equal suffrage to women, after a campaign of unprecedented keenness and interest. The New York State Woman Suffrage Party and its sympathizers organized supporters in every county and prepared thoroughly to utilize every advantage known to experienced political campaigners. Among other evidences of this was a petition for the vote signed by 993,152 women. Even before the actual campaign was fully under way they had secured the open and often hearty support of public men who not long previously had been lukewarm or entirely indifferent. True to his principle that the determination of qualifications for the suffrage should be left to the States, President Wilson wrote to Mrs. Whitehouse, head of the New York Suffrage Party, expressing his hope that the voters "would rally to the support of woman suffrage by a handsome majority." Many public men lent their support as did also various papers, although the opposition was strenuous and determined. An interesting feature was the great predominance of votes in favor in New York City, and in the cities generally. Thus, New York County gave 122,300 votes for to 85,500 against; Kings County gave 123,100 for to 89,100 against.

Other American Legislation. The most important other legislation in the United States included the extension of the presidential suffrage to the women of Michigan, Nebraska, North Dakota, and Rhode Island. Presidential suffrage had been possessed by women in Illinois since 1913, so that altogether at the close of 1917 they had this right in 5 States besides the 12 equal suffrage States. Women thus possessed a voice in the choice of 169 out of 531 presidential electors. Arkansas women were given the privilege of voting at presidential primaries. Presidential suffrage was granted by the legislatures of Indiana and Ohio, but the privilege was revoked in the former State by a decision of the Supreme Court, and in the latter was taken away by popular referendum in November. The vote in Ohio was 265,425 for and 379,779 against. Although one-third of the counties cast a majority in favor, the vote in Hamilton County (Cincinnati) was only 23,170 for to 80,933 against and in Cuyahoga County (Cleveland) 41,765 in favor to 59,949 against. This action of Ohio was offset by that of North Dakota in granting the presidential suffrage by legislative act although a suffrage amendment to the State constitution had been defeated by a majority of nearly 90,000 in the 1914 election. In Arkansas, Nebraska, and North Dakota women were granted full municipal suffrage, while in Florida, Ohio, and Tennessee they were granted the municipal suffrage in certain cities. Especial importance was attached to the achievement in New York and Rhode Island, because these States border upon the Atlantic and represent strongholds of traditional opposition to the political privileges of the feminine sex. In Maine an equal suffrage amendment was rejected by a vote of 20,604 in favor to 38,838 against.

On September 13 the Senate passed a bill extending the suffrage to women in Hawaii having property and the general qualification required of men as to age, residence, etc. The bill also authorized the Hawaiian legislature to grant equal suffrage to women.

Great Britain. Early in February the report of the Parliamentary Committee on Electoral Reform favored granting the vote to women. This proposal was under debate in the House of Commons in March and April. David Lloyd George was strongly in favor, asserting that in view of woman's multifarious services during the war it would be inequitable, unjust, and ungrateful not to give them a voice in post-war policies. Ex-Premier Asquith, who had stubbornly resisted the assaults of the suffragists a few years earlier, announced his complete change of view in these words: "Wherever one turns, women may be seen, who, without detriment to the prerogatives of their sex, are performing work which, three years ago, would have been regarded as falling exclusively within the province of man; hence, after the war, a readjustment must take place in which women shall have as clear a right to speak as have men." Similar views were expressed by other leaders, including Andrew Bonar Law, head of the Unionist Party. The bill provided that women of at least thirty years of age and meeting the qualifications required of men for registration as Parliamentary electors shall be entitled to registration as such and to vote in the districts in which they reside. Marriage shall be no bar. The purpose of the age limitation was to prevent women from constituting the majority of voters; adult women even before the war outnumbered adult men. The vote in the House of Commons on June 19 was 385 in favor to 55 opposed. The bill was passed by the House of Lords on January 10, 1918, by a vote of 134 to 69.

WOMEN IN INDUSTRY. The most important aspects of the industrial employment of women in 1917 related to the extension of their activities and problems of health and morals due to war-time conditions. From every industrial nation, including Japan, and from many still predominantly agricultural, including Russia and South American republics, came reports of the increased employment of women. This was due in belligerent countries both to the drafting of men and to the extraordinary pressure of war demands, and elsewhere to the latter cause. As in the case of child labor and labor in general there was a tendency to relax restrictions as to hours and conditions so as to increase output (see CHILD LABOR; and LABOR). This met with strenuous opposition from welfare workers; moreover, considerable publicity was given to scientific inquiries as to the relation of the length of the working day and of rest periods to output, especially studies made by the British Munitions Ministry, all of which showed that the ten and twelve-hour day were in the long run less efficient than the eight-hour day. Women were made to rejoice by the upholding of minimum-wage (q.v.) laws as constitutional; by the activities of National Woman's Trade Union League (see TRADE UNIONS), National Consumers' League, and various bodies seeking to protect women war workers.

UNITED STATES. In this country women were drawn in greatly increased numbers into many occupations, notably agriculture, munitions plants, street transportation, and elevator service. They replaced many men in clerical positions and office work of all kinds. The Federal government made a national demand for women stenographers and typewriters, utilizing State and city civil service lists and advertising in papers, magazines, and street cars. Special efforts were made in many places, especially in Connecticut, New Jersey, New York, and Delaware to recruit women for farm and truck garden work. Seven large railways began training women as car cleaners, ticket agents, and for other positions. Factories generally enlarged their utilization of female labor.

Many organizations sought to protect women from the increased sweating and hardships of war-time industrial pressure. In the clothing industry at New York and other centres the National Consumers' League found more housework than usual on account of army contracts and yet wages were very low. In spite of government orders against the practice subcontractors engaged house workers on khaki clothing at rates that gave the worker $3.60 for a twelve-hour day less the cost of thread. Flag making was attended by similar conditions. Hence, widespread demand for increased inspection. Coöperation was effected between the Federal Department of Labor and the Bureau of Registration and Information of the National League for Women's Service looking to a survey of industrial demands and conditions. On June 18 a conference was held by Secretary of Labor Wilson with representatives of this bureau, the Committee on Labor of the Advisory Commission of the Council of National Defense (Samuel Gompers, chairman), the subcommittee on Women in Industry (Mrs. J. Borden Harriman, chairman) of the Gompers' Committee, the Women's Committee of the Advisory Commission of the Council of National Defense (Mrs. Anna Howard Shaw, chairman), and the National Woman's Trade Union League. Plans were begun to protect, as to hours, wages, sanitary conditions, moral surroundings, travel, and lodging, the thousands of women being drawn into industries related to war.

Bureau of Printing and Engraving. The pressure of government work at the Bureau of Printing and Engraving led to much overtime for its 4000 employees, most of them women. Complaints by numerous organizations to the director and to Secretary McAdoo were followed by a statement of facts collected by Representative Jeanette Rankin and steps by her for a congressional inquiry. Thereupon the secretary of the treasury appointed a committee to investigate. This found the nine-hour day the rule; and twelve to thirteen hours frequent. The eight-hour day was at once restored and effort made to secure a better distribution of work.

Kansas and Wisconsin. On July 28 the Kansas Industrial Welfare Commission established by decree a nine-hour day for women in mercantile establishments. After hearings and investigations, the Wisconsin Industrial Commission issued a decree, June 29, effective August 1, forbidding night work by women in factories and laundries between 6 P. M. and 6 A. M.; and restricting to eight per day and forty-eight per week women's work in mechanical and mercantile establishments, telephone and telegraph offices, restaurants, and transportation when such women work more than one night per week after 6:30 P. M.

Legislation. The Illinois legislature created a commission of five to consist of one representative of women workers, one employer of women, a social worker, and two physicians, to investigate conditions of woman's labor, especially hours. North Dakota created a public welfare commission to investigate "economic, moral, and social conditions of women, girl, and child workers" in factories, hotels, and elsewhere. Its report must include average wages of women and children in industry. Vermont extended its prohibition of the employment of women two weeks before or four weeks after child birth to mills, canneries, workshops, and factories; it formerly included only manufacturing or mechanical establishments. Delaware required the provision of suitable lunchrooms free from dust and fumes in establishments employing women where there are poisonous fumes, gases, or dusts; and required such places to install and operate exhaust fans. It also required all mercantile or manufacturing establishments, restaurants, hotels, offices, places of amusement, telephone and telegraph offices, employing women to provide 250 cubic feet of air for each person in each work room, and to properly heat, light, and clean such rooms and adjoining halls and stairways; clean water and sanitary fountains or individual cups must be provided free of charge for ice or water; also proper water closets suitably lighted, ventilated, screened, and cleaned; finally one seat for each three women for rest in the work room, and, where female employes must change clothing, dressing rooms with lockers or separate hooks are required. Montana required the installation of seats for women workers with permission to use them when not actively employed.

Rhode Island required the provision of separate dressing rooms for women at the discretion of the factory inspector, and seats for women to be available when duties permit. See also LABOR LEGISLATION; CHILD LABOR; and MINIMUM WAGE.

GREAT BRITAIN. In the Board of Trade *Labour Gazette* for August were given figures comparing the number of women employed in different occupations in July, 1914, and April, 1917, as follows:

Occupation	*Females Employed in July, 1914*	*Increase (+) or Decrease (—) in the Employment of Females, July, 1914, to April, 1917*	
		Number	*Per Cent*
Industries	2,184,000	+ 453,000	+ 20.7
Government establishments	2,000	+ 198,000	+ 9,404.9
Transport	19,000	+ 62,000	+ 325.4
Finance and banking	9,500	+ 50,000	+ 526.2
Commerce	496,000	+ 307,000	+ 61.9
Professions	67,500	+ 21,000	+ 31.2
Hotels, public houses, cinemas, theatres, etc.	176,000	+ 13,000	+ 7.4
Civil service	66,000	+ 89,000	+ 134.9
Local government	198,000	+ 47,000	+ 23.9
Total	3,218,000	+ 1,240,000	+ 37.6

Thus, since the war started, nearly one million and a quarter females had been added to the labor force of Great Britain. These figures, moreover, did not include casual agricultural laborers, domestic servants, and women employed in small shops or in military, naval, and Red Cross hospitals. It was known, however, that the number employed in these hospitals had increased by 36,000. On the other hand, female casual farm laborers had decreased by 13,000 and workers in small shops and domestic service were about 300,000 fewer. There thus appeared to be a net increase of 963,000 women workers. Moreover, the rate of the increase in the number of women workers was in all main groups accelerating. Thus in the first quarter of 1917 the increase was 54,000 as compared with 26,000 the preceding quarter. The metal trades alone had absorbed 41,000 of the increase from January to April, 1917, and the chemical trades 8000. Of the 453,000 drawn into various industries, as shown in the above table, 308,000 had gone into various branches of the metal trades; 51,000 into chemical trades; 22,000 into textiles; 24,000 into wood-working, and 18,000 into food industries; on the other hand, there was a decrease of 37,000 in the clothing trades and of 7000 in the paper and printing trades. The high wages paid in the metal and chemical industries had diverted labor from clothing and printing and had retarded their movement into the textile trades so that in April, 1917, 38 per cent of the firms in textiles reported a shortage of female labor; 23 per cent of the firms in clothing and 17 per cent of those in paper and printing likewise reported a shortage of women workers. It was estimated that the total number of men replaced by women from July, 1914, to April, 1917, was 1,256,000.

In August the ministry of munitions announced advances in wages for all females employed in munitions establishments. The women of 18 years of age and over received an increase of 2*s.* 6d. (61 cents) per week and girls under 18 an advance of 1*s.* 3d. (30 cents) per week. The advances applied to the controlled establishments in Ireland as well as in Great Britain. These advances were made necessary by the increasing cost of living. Weekly wages of the women munition workers ranged from 22*s.* 6d. ($5.47) as a minimum up to £4 or £5 in exceptional cases. Owing to the increase in prices the purchasing value of a pound had fallen from $4.87 in 1914 to $3.53 by the middle of 1917. It was also announced that tribunals for the hearing of claims for increases in wages would be established for women munition workers.

British Women Police. A significant English development was the rapid increase in the number of police women. In the London police department force a new bureau of women police was created in 1914 under Damer Dawson; by 1917 this had over 300 members. This plan was adopted in other centres, including Grantham, Hull, Folkestone, Birmingham, Wimbledon, and Richmond. The great service of these women was in the protection of girls in places where soldiers were numerous. Industrial concerns also created women police forces for their plants; in some of the large munitions establishments with thousands of women workers the number of police women ranged from 40 to 120, both for service within plants and for oversight of women's lodgings, boarding houses, and travel.

GERMANY. As in other warring countries women were drawn into a multitude of new industrial pursuits in large numbers. There was probably no line of industrial effort in which women were not to be found and in all of the more common occupations their numbers became astonishingly great. Thus, while in 1914 only 7265 women were employed in German mines by the close of 1916, 37,560 were thus employed. During the same period the number of young persons employed in mines rose from 31,290 to 43,095. The percentage of women to all mine employees increased from 0.94 at the middle of 1914 to 6.51 late in 1916, and the percentage of young persons rose from 4.08 to 7.46. The wages per shift rose from 29.9 cents at the middle of 1914 to 47.3 cents late in 1916 for women workers in the mines of Upper Silesia; in the Ruhr Basin the increase was from 57.9 cents to 85.3 cents. These increases were far less than the rise in prices.

FRANCE. French women were drawn into nearly every line of trade, transportation, commerce, and industry. Branches of bread making and biscuit baking from which they previously were excluded came to be dominated by them. They were employed in all branches of food preserving; in the manufacture of sugar they served as strainers, filterers, diffusers, knife sharpeners, truck movers, and various kinds of machine tenders. They were employed in starch and glucose factories and the wine-making industry was very largely dependent upon them. They were to be found doing work previously monopolized by men on steam and electric railways, in numerous kinds of manufacturing, on farms, and in shops and offices.

A delegation of French working women visited England to study factory conditions and methods. It strongly recommended the introduction of British methods of caring for health and comfort and the appointment of women overseers. The French ministries of labor and munitions promised to form a national council of women to assist in such reforms. A school was opened in Paris to instruct women superintendents. Many bodies, especially medical societies and women's organizations, actively sought to improve the safeguards of female laborers, especially of pregnant women and young mothers. In consequence, the ministry of labor issued various sanitary regulations and other restrictions.

References. Amy Hewes, *Women as Munitions Makers;* Mary K. Sunkhovitch, *The City Worker's World;* Louck and Sydenstricker, *Conditions of Labor in American Industries;* Marion Talbot, *The Education of Women;* B. L. Hutchins, *Women in Modern Industry;* Annie M. McLean, *Women Workers and Society;* Mary Van Kleeck, *A Seasonal Industry; a Study of the Millinery Industry in New York City;* Helen M. Bennett, *Women and Work. The Economic Value of College Training;* Henriette R. Walter, *Munition Workers in England and France;* Health of Munitions Workers Committee of the British Ministry of Munitions, *Memoranda*, especially No. 4, *Employment of Women*, No. 5, *Hours of Work*, No. 7, *Industrial Fatigue and Its Causes*, No. 12, *Statistical Information Concerning Output in Relation to Hours of Work*, and No. 17, *Health and Welfare of Munitions Workers Outside the Factory.* See Agriculture.

WOMEN'S CLUBS, General Federation of. The federation was organized in 1889 in New York City. Its conventions and reports are biennial, the last convention having been held in New York City, May 24-June 1, 1916. In 1917 some 2100 clubs were members of the federation. They are to be found practically in every State in the union and even in Alaska and the Canal Zone. The following are the officers for 1916-18: President, Mrs. Josiah Evans Cowles, Los Angeles, Cal.; first vice-president, Miss Georgie A. Bacon, Worcester, Mass.; second vice-president, Mrs. Eugene Reilly; recording secretary, Mrs. W. I. McFarland, Wagner, S. Dak.; corresponding secretary, Mrs. Francis D. Everett, Highland Park, Ill.; treasurer, Mrs. William B. Young, Jacksonville, Fla.; auditor, Mrs. William P. Harper, Seattle, Wash.; manager of the bureau of information, Mrs. Mary I. Wood, Portsmouth, N. H.; manager service office, Miss Helen Louise Johnson, Washington, D. C.; *General Federation Magazine*, Washington, D. C.

WOOL. See Stock Raising.

WORCESTER MUSIC FESTIVAL. See Music, *Festivals.*

WORCESTER POLYTECHNIC INSTITUTE. A non-sectarian institution for the technical education of men at Worcester, Mass. In the fall of 1917 there were 425 students and 44 members of the faculty; 350 students, alumni, and members of the faculty were in government service at the end of the year. The library contained 15,358 volumes. Productive funds in 1917 amounted to $945,204 and the income therefrom to $43,079. Benefactions to the amount of $26,500 were received in 1917. The institute was founded in 1865. President, Ira N. Hollis.

WORKMEN'S COMPENSATION. The most extensive movement in the field of labor legislation in the United States in recent years has been the enactment by 37 States, 3 Territories, and the Federal government of workmen's compensation laws. These replace the old system of employer's liability by systems of more or less definite compensation for industrial accidents, and often also for occupational diseases, without the necessity of a suit at law. Based on the principle that risks to health and life and limb are inevitable, and that the burden should rest upon industry rather than upon the victims of industrial accident or condition, these laws aim through the careful administrative supervision of State commissions to proportion the compensation received by the injured worker to the severity of the injury. The legislation in 1917 was not extensive. There was, however, as indicated below, considerable attention given to the administrative problems connected with workmen's compensation; and action was taken by the Federal government to provide compensation for all persons in the military or naval service of the United States. In addition, a decision of the United States Supreme Court handed down March 6 upheld the constitutionality of the compensation laws of Iowa, New York, and Washington.

The International Association of Industrial Accident Boards and Commissions met at Boston, August 21-25, for its fourth annual session. Representatives were present from 15 States, 4 provinces of Canada, the United States Employees' Compensation Commission, and the Federal Bureau of Labor Statistics. The following fundamental problems of workmen's compensation were discussed: prevention of accidents and disease; care and cure of the injured worker; reëducation and adaptation to new industrial conditions; and the administration of compensation benefits. Among the resolutions adopted was one requesting the appointment of a committee to formulate and promote legislation eliminating the conflicts in jurisdiction of Federal and State authorities in industrial accident cases occurring in transportation and kindred occupations. Another resolution endorsed "every wise effort to rehabilitate those injured in industry and also those injured in military service." The next convention will meet at Madison, Wis., with F. M. Wilcox, of the Wisconsin Industrial Commission, as president.

As summarized in the *Monthly Review* of the Bureau of Labor Statistics the papers read at this convention advanced materially understanding of problems relating to prevention, the restoration of the injured workers, and "free choice" in the selection of physicians. With reference to accident prevention it was shown that a few years ago, in view of the fact that most accidents result from the carelessness of workers, it was believed that there must be always a large residuum of inevitable accidents. There followed a campaign for the introduction of safety devices, for the enactment of safety laws, and for safety education. Experience has shown that accidents resulting from mechanical causes are much more severe than those due to workers' negligence. While mechanical accidents constitute only one-fourth of all, they are responsible for 50 per cent of time lost. Experience has also shown that the results of education have been limited almost entirely to a reduction of accidents from non-mechanical causes, or those resulting in short-time losses. Consequently, the present problem of accident prevention is one of safety engineering, under which is included such large problems as the design and location of buildings and transportation facilities, means of exit, and entrance to all parts of factories, sufficient lighting, protection of dangerous machines, and similar matters.

The cure and industrial rehabilitation of the worker requires (1) medical and surgical attention, (2) proper equipment and instruction in the use of artificial appliances to remedy the loss of hands, feet, fingers, or other bodily part, (3) education in some new industrial adaptation, and (4) compensation during the period of cure and reëducation. Only the first of these problems has been met with any adequacy. It was pointed out that Canada has developed facilities for meeting all of these four needs in the case of injured soldiers. The Military Hospitals' Commission provides treatment in convalescent homes and vocational instruction, while the Board of Pension Commissioners furnishes gratuities and financial assistance, and in each Province are commissions for securing employment (see below).

The free choice of physician is a thorny problem which has occasioned much dispute and dissatisfaction. Most of the State laws give the employer the responsibility of providing reasonable medical and hospital care; and this is believed to carry the privilege of choosing the physician. Latterly the movement to permit employees to choose their own physician has gained momentum. In favor of selection by the employer it is argued that he is more capable of judging the efficiency of a physician than the employee; that immigrants will otherwise be frequently victimized by quack practitioners of their own race; that many large establishments maintain hospitals of their own which insures the best of treatment and the closest medical supervision. On the other hand, in favor of selection of the physician by the employee, it is argued that the medical relationship is distinctly private and personal; that best therapeutic results require confidence in the practitioner; that the injured worker has most at stake; that the frequent practice of employing a physician on a contract basis has resulted in injured employees receiving inadequate attention; that consequently employees frequently return to work before restored to full health. The physicians themselves have been much dissatisfied with the practices arising under the compensation laws. The extensive use of hospitals with charity patients has deprived the physicians of a legitimate source of income. On the other hand, it has been argued that physicians with low standards have padded their bills. The solution of these difficulties seems likely to be reached through the formation of panels of competent and experienced physicians from which the employee will have the privilege of choosing a physician.

The Committee on Statistics of the Association presented at the Boston meeting the results of its inquiries as to the relative severity of different injuries. It is evident that the importance of an injury may be measured less accurately by its frequency than by the loss of time occasioned by it. On this basis this committee, using more or less arbitrariness, found the relative importance of certain injuries on a scale of 100 to be: death, 100; total permanent disability, 100; arm above elbow, dismemberment, 75; permanent disability of thumb, 10; loss of one eye, 30, and both eyes, 100; etc. The Bureau of Labor Statistics prepared a similar severity scale for its own use in reports on *Accidents and Accident Prevention* in the machine building and the iron and steel trades (Bulletins 216 and 234).

THE NATIONAL SAFETY COUNCIL held its sixth congress in New York City during the week of September 9. At the same time it carried on an exhibit of safety devices and methods in connection with the American Museum of Safety at the Grand Central Palace.

CONSTITUTIONALITY. As indicated above, the constitutionality of workmen's compensation laws was upheld by the Supreme Court on March 6 in a comprehensive decision approving three of the leading types of such laws. The Iowa law was elective: gave both employer and employee the option of accepting its provision or retaining the older system of employer's liability. It, however, sought to influence both to come under the new law by removing the traditional "defenses" of the employer and by offering to the employee definitely assured compensation in place of the uncertainties of legal prosecutions. In approving this law the Supreme Court virtually approved the majority of compensation laws in the country.

The New York and Washington laws were both compulsory, but the New York law, which was enacted after the State constitution was especially amended, is limited in its scope to "hazardous occupations." The Washington law is more extensive and thoroughgoing, covering all employments except agriculture and domestic service, excluding private casualty companies, and requiring employers to insure in a State fund. In the case of this law the decision was 5 to 4.

LEGISLATION. During 1917 the States of New Mexico, New Jersey, Delaware, Utah, Idaho, and South Dakota were added to the list of States replacing the old system of employers' liability by the new system of workmen's compensation. There were thus 37 States, the Territories of Alaska and Hawaii, Porto Rico, and the Federal government included under jurisdiction of compensation laws. Besides these new laws the statutes in 24 States were amended and supplementary laws enacted in two others, besides a new law regarding maritime injuries enacted by Congress. Only the general nature of this vast mass of legislation can be here indicated. All the new legislation with a few minor exceptions enlarges the scope of previous laws and makes more generous their provisions. California and Hawaii broadened their laws to cover occupational diseases. Illinois made its law compulsory instead of elective; but Nevada substituted active election for presumed election. Indiana excluded railroad train service from its law; Washington did likewise except railway construction work which is placed under such law as Congress may enact; these actions were designed to give Congress a freer hand. Numerous limitations were removed: Iowa struck out the clause limiting industries covered to those carried on "for pecuniary gain"; requirements as to number of employees necessary to bring the establishment under the law were reduced in Texas, Nebraska, Wyoming, and Wisconsin. New York, Texas, and Wyoming extended the list of employments enumerated, as did also Oregon and Rhode Island. Vermont included all employees earning under $2000 in place of all earning under $1500 as previously. The waiting time intervening between the injury and beginning of compensation was reduced in California, Connecticut, Hawaii, Indiana, Kansas, Minnesota, Nebraska, Vermont, and Washington. In Nebraska, New York, Rhode Island, Washington, Wisconsin, and Wyoming a provision was inserted authorizing the payment of compensation from the time of injury in the case of more serious accidents; this was due to the realization that the waiting time between injury and compensation was intended to do away with malingering and the seeking of benefits for trivial injuries, a motive not existing in the case of serious accidents. As regards beneficiaries the Alaska statute was made to include posthumous children, and children beyond age 16 in case of physical and mental incompetence; Nevada extended the age to which compensation is allowable from 16 to 18 years. In numerous States the provisions with reference to burial allowances were changed, most of them in the direction of increased allowances. Similarly with reference to medical, surgical, and nursing aid more liberal provisions were passed in California, Hawaii, Iowa, Kansas, Nevada, Rhode Island, Texas, Vermont, Washington, and Wisconsin.

Financial benefits were also increased: Connecticut raised the maximum in case of disability or death from $10 to $14 per week, as did also Massachusetts in case of total disability; Illinois advanced maximum death benefits from $2400 to $4000 and maximum percentage allowance for disability from 50 per cent to 65 per cent of wages. In Iowa the minimum and maximum payments for disability were raised from $5 and $10 respectively to $6 and $15 per week. Kansas increased the allowance for disability from 50 per cent to 60 per cent of wages, raised the minimum death benefit from $1200 to $1400 and the maximum from $3600 to $3800. Changes similar to the foregoing but differing in details were made in Minnesota, Nebraska, Nevada, Ohio, Vermont, and Wyoming. In several States specific schedules of compensation for differing periods and specified injuries were inserted, thus showing a tendency to remove more aspects of compensation from the discretionary action of compensation commissions. California, Nebraska, and New Jersey required all employers to insure themselves against risk, unless they prove their ability to carry their own risks; Pennsylvania required contracts with State or local governments to insure their employees under the State Compensation Law. As regards administration, Minnesota created a board to exercise certain advisory functions as to the insurance features of the law, and an investigative board to propose needed amendments; Nebraska placed administration in charge of a division of the Bureau of Labor; Vermont abolished its industrial accident board and gave administrative authority to one man to be known as the commissioner of industries; Washington provided for the creation of local aid boards to consist of one representative of employers and one of workmen, and created a State Medical Aid Board to establish rules and practices for the care and treatment of injured workmen.

Maritime Injuries. On May 21 the Supreme Court of the United States decided two compensation cases growing out of injuries in New York harbor. Similar cases had been decided by the State courts of California, Connecticut, and Minnesota in harmony with the views of the New York courts. These cases grew out of injuries to stevedores unloading at New York vessels engaged in Atlantic coast trade. The New York Compensation Commission awarded injuries under the State law. The Southern Pacific Company in one case brought suit to obviate the payment of compensation on the ground that the injuries having arisen in interstate commerce the case was not under State jurisdiction. The action of the commission was upheld by the New York courts, partly on the ground that there was no Federal legislation applicable to the case. The United States Supreme Court agreed that no Federal legislation was applicable, but also declared that the State law was not applicable because admiralty jurisdiction is conferred by the constitution upon the courts of the United States. The decision held that longshore work is maritime in nature and that "the rights and liabilities of the parts in connection therewith were matters clearly within admiralty jurisdiction." Justices Holmes, Pitney, Brandeis, and Clarke dissented mainly on the ground that industrial injuries should be dealt with by common-law remedies and that common-law jurisdiction remained with the State courts.

Following the above decision Senator Johnson of California introduced in Congress in September a bill designed to transfer to the States the control of such cases or at least to give the State courts concurrent jurisdiction. The bill was approved by the president on October 6. As passed the law gives claimants the right to seek compensation under the laws of any State in case of such maritime injuries though not excluding resort to Federal courts of admiralty and maritime jurisdiction.

Government War Compensation. The war risk insurance authorized in September, 1914, by Congress applied only to American vessels in foreign trade and their cargoes. Up to June 30, 1917, this insurance resulted in net losses to the government of $10,176,000. It was argued that if the government could insure seagoing property in foreign commerce it should similarly insure sea-faring men engaged in this same trade. Private insurance companies could not risk such insurance and many seamen refused to engage on foreign-trade vessels without insurance. Consequently in June Congress passed an amendment, approved by the president, June 12, to the act of September, 1914, whereby the Bureau of War Risk Insurance was authorized to provide insurance for masters, officers, and crews of American merchant vessels against loss of life or personal injury on account of risks of war and to provide for compensation during detention following capture by enemies of the United States. The act authorized compensation in case of death, permanent total disability, or loss of both hands, both arms, both feet, both legs, both eyes, or any two of them amounting to one year's earnings or 12 times the monthly earnings, but not less than $1500 nor more than $5000. The following compensations were also specified: one hand, 50 per cent of a year's earnings; one arm, 65 per cent; one foot, 50 per cent; one leg, 65 per cent; one eye, 45 per cent; and total loss of hearing, 50 per cent. In case of detention by an enemy, compensation should be at the same rate as the earnings previous to capture. A division of marine and seamen's insurance was organized in the Bureau of War Risk Insurance for the issuance of policies on the lives of masters, officers, and crews.

Finally the act of October 6 provided for family allotments and allowances, extended the above compensation idea to all soldiers and sailors, and set up a plan of government insurance (see INSURANCE for this plan). The compensation sections of this act covered death or disability of all persons employed in active military or naval service, including the women in the army and the navy nurse corps. In case of death compensations range from $20 for one motherless child or widowed mother and $25 for a childless widow to a maximum per month of $57.50 for a widow with four or more children. For injuries compensations were graded according to severity and number of dependents.

CANADA. As early as September 1, 1914, Canada put into operation a scale of compensations for militiamen wounded or disabled while in active service, as also a pension system for the dependents of those killed. The compensations were graded according to the severity of the injury and rank in the service ranging in the original plan from $75 per year for a man in the ranks slightly injured to $2100 for a brigadier general totally incapacitated for earning a livelihood. Later the plan was modified so as to provide 10 classes and compensations ranging from $480 per year in case of total disability of the common soldier to $2700 a year in case of a brigadier general. In case of death widows of common soldiers receive an allowance of $22 per month plus $5 per month for each child. These pensions graded upward through various ranks being $45 for the widow of a captain plus $7 for each child; $50 for the wife of a major plus $8 for each child; and culminating in $100 for the widow of a brigadier general plus $10 for each child. These compensations were in addition to the grants by the Canadian government to the dependents of soldiers as a "separation allowance," as follows: privates, $20 per month; sergeants, $25; captains, $40; lieutenant colonels, $60; etc. In addition the Canadian Patriotic Fund, organized in August, 1914, and securing funds from private sources, made "separation allowances" ranging from $5 in case of needy wife with no children to $30 per month in the case of a needy woman with 7 or more children. The Canadian system, besides the insurance described under INSURANCE (q.v.), also included the activities of the Military Hospitals Commission charged with the cure, vocational training, and general rehabilitation of injured soldiers.

NEW SOUTH WALES. A new compensation act became effective on July 1, 1917. It requires every employer or his legal representative to make provision for accident compensation. All employees, including clerks, typists, messengers, and domestic servants, besides all manual workers, are included within the law, with the following exceptions: (1) Any person earning more than $1518 per year; and (2) casual workers. Compensation in case of death ranges from $1460 to $2435, an average increase of $500 over the previous law. For permanent disability by accidents or disease the compensation is $3650; for temporary total or partial disability weekly payments equal to one-half wages, but not exceeding $9.75 per week nor more than $3650 in total.

GREAT BRITAIN. The Workmen's Compensation (War Addition) Act became effective September 1 and will remain in force until 6 months after the cessation of the war. As its title implies the purpose of the act is to increase compensations for injuries during the war period. It requires the payment of benefits 25 per cent greater than those allowed under the Compensation Act of 1906 to every employee suffering total disability as a result of an industrial accident. Such compensation is to be paid to all employees thus incapacitated on or after September 1, 1917, whether the accident resulting in their disability occurred before or after that date.

WORLD'S CROPS. See AGRICULTURE.

WRESTLING. The winners of the Amateur Athletic Union wrestling championships, held at Atlantic City, N. J., were: 108-pound class, Carl Benson, Swedish-American A. C.; 115-pound class, Louis J. Servais, University of Pennsylvania; 125-pound class, Carl Liljehult, Bronx Church House, New York City; 135-pound class, Peter Metropoulos, Gary (Ind.) Y. M. C. A.; 145-pound class, Harry Jenkins, Pittsburgh A. A.; 158-pound class, Charles Johnson, Swedish G. A. P., Boston; 175-pound class, Dexter Very, Pittsburgh A. A.; heavyweight class, Dexter Very, Pittsburgh A. A.

Cornell for the fifth year in succession won the intercollegiate championship with the University of Pennsylvania and Lehigh University tied for second place. The winners of the various bouts were: 115-pound class, Servais, Pennsylvania; 125-pound class, Wigsten, Cornell; 135-pound class, Kaiser, Pennsylvania; 145-pound class, Post, Cornell; 158-pound class, Sager, Cornell; 175-pound class, Zepp, Cornell; heavyweight, Bard, Cornell.

Many professional bouts were held throughout the United States during the year, the season closing with a long tournament at the Lexington Theatre, New York City, which ended with Wladek Zbyszko and Ed (Strangler) Lewis each claiming the championship of the world. Each of these wrestlers had little difficulty in disposing of their opponents. Lewis threw Zbyszko in a bout where the former's famous headlock was permitted but was thrown by Zbyszko in a match where this hold was barred.

The death of Frank A. Gotch, the undefeated heavyweight champion of the world, occurred in 1917.

WRIGHT, HAMILTON. An American physician and pathologist, known chiefly for his campaign against narcotics, died in Washington, D. C., January 9, 1917. He was born in Cleveland, Ohio, in 1867. Immediately upon graduating from the medical department of McGill University, he spent a year in studying at first hand tropical conditions of life in China and Japan. Then he became John Lucas Walker exhibitioner of Cambridge University, and was appointed assistant director of the London County Laboratories. At this period he spent some time in Heidelberg and other continental universities. The British Government sent him in 1899 to the Malay states to study beriberi and other tropical diseases, and there he remained for four years, founding an Institute for Medical Research. Several more years of research work, in the United States as honorary fellow of Johns Hopkins, and in Europe, were followed by appointment as American delegate to, and acting chairman of, the International Opium Commission, which met at Shanghai, China, in 1909. Dr. Wright was also prominent in the second and third Opium Conferences at The Hague, in 1913 and 1914. He worked successfully to have the Harrison Narcotic Law and three other similar acts passed, suppressing abuse of narcotics in this country and forbidding citizens of the United States from engaging in trade in narcotics with China. From 1915 till he was injured in a motor accident, he devoted himself to relief work in France. His writings are in the form of papers and monographs.

WÜRTTEMBERG. A European kingdom, one of the more important constituent states of the German Empire. The capital is Stuttgart. Württemberg lies between the kingdom of Bavaria on the east and the grand duchy of Baden on the west. The area is 7532 square miles, which is about equal to the land area of New Jersey. The population at the census of December 1, 1910, was 2,437,574, as compared with 2,169,480 in 1900, 2,036,522 in 1890, 1,748,000 in 1864, and 1,411,000 in 1816. The average annual increase from 1816 to 1910 was 0.58 per cent; from 1900 to 1910, 1.16 per cent. In 1910 communes having 2000 or more inhabitants aggregated a population of 1,223,916. Evangelicals numbered 1,671,183 (68.56 per cent); Roman Catholics, 739,995 (30.36); other Christians, 12,863 (0.53 per cent); Jews, 11,982 (0.49 per cent). Württemberg has a bicameral parliament. The lower house consists of 92 deputies elected for six years by direct vote. The king in 1917 was Wilhelm II, who was born in 1848 and succeeded to the throne October 6, 1891.

WYOMING.. POPULATION. The population of the State in 1910 was 145,965, and on July 1, 1917, it was estimated to be 184,970.

AGRICULTURE. The acreage, production, and value of the principal crops as estimated by the United States Department of Agriculture in 1916-17 were as follows:

		Acreage	*Prod. Bu.*	*Value*
Corn	1917	33,000	660,000	$1,155,000
	1916	25,000	550,000	495,000
Wheat	1917	198,000	4,206,000	8,412,000
	1916	170,000	3,670,000	5,322,000
Oats	1917	263,000	9,468,000	7,574,000
	1916	250,000	8,750,000	5,250,000
Potatoes	1917	30,000	4,650,000	4,836,000
	1916	18,000	2,340,000	2,995,000
Hay	1917	560,000	*a* 952,000	16,184,000
	1916	580,000	1,044,000	12,528,000

a Tons.

MINERAL PRODUCTION. The coal production in the State in 1916 was 7,910,647 net tons, valued at $12,239,707, an increase compared with 1915 of 1,356,619 tons, or 21 per cent in quantity, and of $2,683,903, or 28 per cent in value. The increase is attributed mainly to greater consumption of coal by railroads. The car supply was nearly equal to requirements export in September and October; the supply of labor was short in November and December. The number of men employed in the coal mines of the State during the year was 7255, compared with 7244 in 1915. There were produced in the State in 1916 6,234,137 barrels of petroleum, valued at $5,644,080 compared with 4,245,525 barrels in 1915, valued at $2,217,018, an increase of 47 per cent in quantity, and of 155 per cent in value. The iron ore mined in the State in 1916 amounted to 545,744 gross tons, compared with 434,513 tons in 1915. The total production of gold, silver, and copper in 1916 was $666,414, as compared with $93,286 in 1915. Of the total increase of $573,128 copper contributed $563,945.

TRANSPORTATION. The total railway mileage of the State is about 2000. The roads having the longest mileage are: The Union Pacific, 470; Chicago, Burlington, and Quincy, 236.

FINANCE. The report of the State treasurer for the biennial period 1914-16, the latest for which statistics are available, shows a balance on hand, October 1, 1914, of $718,426. The total receipts amounted to $3,559,029, and the disbursements to $2,718,117, leaving a balance on hand, September 1, 1916, of $1,046,606.

EDUCATION. The total school population in 1916 was 41,831. The total enrollment was 36,630, with the average daily attendance of 25,000. The number of male teachers was 253 and the female teachers 1482. The average monthly salary of male teachers was $85.91, and the salary of female teachers $61.91. The total expenditure for school purposes was $1,589,196.

The legislature of 1917 put the State school system under a State Board of Education, with a commissioner as the executive officer. The commissioner is elected by the board. Formerly the State office was under a State superintendent elected by the people. The office still exists in name, but the chief duty of the State superintendent, so far as schools are concerned, is membership on the State Board of Education.

CHARITIES AND CORRECTIONS. The charitable and correctional institutions of the State include the State Hospital for the Insane at Evanston, the Wyoming State Penitentiary at Rawlins, the Wyoming Soldiers' and Sailors' Home at Buffalo, the Big Horn Hot Springs Reservation at Thermopolis, the General Hospitals at Sheridan, Rock Spring, and Casper, the Wyoming School for Defectives at Lander, and the Wyoming Industrial School at Warland.

LEGISLATION. Among the more important measures passed by the legislative session of 1917 are those noted below:

The laws relating to elections were amended in important particulars. Non-partisan ballots are required for the election of the judiciary and certain school officers. The hours of labor for women are increased from 56 to 60 per week. Measures were passed providing for the regulation and inspection of the sale of gasoline and similar products. Untrue, deceptive, or misleading advertisements are made punishable.

STATE OFFICERS. Acting Governor, Frank L. Houx; Secretary of State, Frank L. Houx; Treasurer, Herman B. Gates; Auditor and Commissioner of Insurance, Robert B. Forsyth; Adjutant-General, W. K. Weaver; Attorney-General, D. A. Preston; Superintendent of Public Instruction, Edith K. O. Clark; Houx, Weaver, and Preston, Democrats; others Republicans.

JUDICIARY. Supreme Court: Chief Justice, Chas. N. Potter; Associate Justices, Cyrus Beard, Chas. E. Blydenburgh; Clerk, W. H. Kelly.

WYOMING, UNIVERSITY OF. A co-educational State institution at Laramie, Wyoming. In the fall of 1917 there were 300 students and 47 members of the faculty; 77 students and 6 members of the faculty were in government service in 1917. The library contained 40,000 volumes. Productive funds in 1917 amounted to $110,693, and the income therefrom to $35,784. A department of music building and a small model rural school for the college of education were erected in 1917. The university was founded in 1887. President C. A. Duniway resigned on September 1, 1917, and Dr. Aven Nelson, professor of botany, was elected acting president for the balance of the academic year.

X-RAYS. See PHYSICS.

YACHTING. Yachting suffered more perhaps from the war than any other sport, practically no competitions of importance being held during the year. All the leading clubs of the United States abandoned the sport and a large number of the craft were turned over to the Federal government. A few organizations, such as the Seawanhaka-Corinthian, Indian Harbor, and Bayside clubs, held regattas on Saturday afternoons during the season and the New Rochelle Yacht Club staged a series of races in the spring and again in the fall.

Miss Detroit II made the best showing of the motor boats in 1917. She won the Gold Cup in the National Power Boat Association race at Minneapolis, averaging 59.6 miles an hour in the first lap of the six-mile course in the final race and establishing a new record. The same boat captured the one-mile championship race by default. *Raven III*, owned by C. Kotchner, was the leader in the distance events, winning both the Miami-Gun Key and Miami-Palm Beach races, the former at 90 miles and the latter 70 miles. All records for hydroplanes were broken by the *Whip-Po'-Will*, owned by A. L. Judson, which averaged 69.38 miles an hour in six one-mile trials on Lake George, and covered one mile in 51.55 seconds at the rate of 70.15 miles an hour.

YALE UNIVERSITY. A non-sectarian institution of higher learning, at New Haven, Conn. In its graduate schools of art and music it is co-educational. In the fall of 1917 the student enrollment was as follows: Graduate school 220, Yale College 913, Sheffield Scientific School 668, School of Fine Arts 33, School of Music 90, School of Forestry 15, School of Religion 79, School of Medicine 78, School of Law 75. Total, after deducting 42 names inserted twice, 2129. The faculty was made up of 159 professors, including other university officers, 89 assistant professors, 4 lecturers on university foundations, 110 instructors, 199 assistants. Total, 561. Leaves of absence were granted at the beginning of the year to over 40 members of the faculty for war work. Ernest G. Lorenzen, formerly professor at the University of Minnesota, Henry Wesley Dunn of the Boston bar, and Edward M. Borchard of the Library of Congress were added to the staff of the law school. On October 1, 1917, 830 Yale students were in some branch of the government service. It was estimated by the *Yale Alumni Weekly* that over 5000 Yale graduates were taking part in the war at the end of 1917. The gifts and bequests received included the following: Charles W. Harkness for general purposes $500,000, Alumni University Fund $315,461, for an armory building $84,355, from the estate of Mary Dewitt Jesup $75,000, for the department of orthopedics from Mrs. E. H. Harriman $100,000, for the department of obstetrics from Charles F. Brooker $50,000, for the Albert Arnold Sprague Memorial Hall $112,574, miscellaneous $280,000. Total production fund on June 30, 1917—$19,823,646. Total income at the end of 1917 amounted to $2,041,704, of which $1,041,087 was income from investments, $563,761 from term bills and student charges, $199,621 from dormitory rents, $197,230 gifts to income, and $40,003 from sundries. The whole number of books in the library of the university is about a million, including both bound and unbound volumes. Capt. Winfield Soverton, U. S. A., was appointed professor of military science and tactics, and Rear Admiral Colby M. Chester, U. S. N., was appointed professor of naval science. The university was founded in 1701. President, Arthur Twining Hadley, LL.D.

YERKES OBSERVATORY. See ASTRONOMY.

YOUNG MEN'S CHRISTIAN ASSOCIATION. The control of this organization is vested in the International Committee of the Young Men's Christian Association, which has its headquarters at 124 East Twenty-eighth Street, New York City. The following statistics are inclusive of May 1, 1917: Number of organizations, 2087; paid officers, 5188; directors and committee forces, 91,155; total membership, 720,468 (7 per cent increase over previous year), of whom 48 per cent are active; total net property and funds paid in, $97,025,000; contributions toward current expenses, $4,045,000; total operating expense for regular work of the North American movement—local and supervisory—$21,105,000; foreign work supervision, $576,400; for work in connection with the European war and on the Mexican border previous to April 1, 1917, $1,500,000.

The foreign work, with its 450 employed officers, exceeds that of all preceding years in significance of results sought and obtained. Native trained leaders exceed 300, and with favorable government recognition, the volume of local support is constantly growing.

When the United States entered the war, the association leaders called for $3,000,000 to provide association service among the enlisted men for the summer of 1917. The public responded to the appeal with $5,000,000. As a result regular association work was carried on (October, 1917) in 186 camps and 245 other places among enlisted men; 265 buildings have been erected and 111 new buildings authorized; 987 secretaries were at work and 1181 were to be assigned before the end of the year for the National Guard Camps and National Army Cantonments. In addition 200 secretaries were at work among American troops overseas and this number has been steadily increasing.

So satisfactory has this work been for enlisted men in the army and navy, and so rapidly have its demands been expanded to meet the great need, that the National War Work Council of the Y. M. C. A. called for $35,000,000 to provide for this service for the nine months from October, 1917, to July, 1918. This call met with a cordial response of over $50,000,000, which amount is now making it possible for more than 2000 employed secretaries to serve the men in camps at 750 different points, camps, and cantonments in America, more than 2500 secretaries to serve, not only the men from the United States now in France, but also to extend the similar association service to men in the French and Italian armies as well. The association work in the army and navy is increasing with almost incredible rapidity.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION. The Young Women's Christian Associations in the United States are united through the agency of a national board, which has its headquarters at 600 Lexington Ave., New York City. Through this board the associations participate in the work of the World's Young Women's Christian Association. In addition to supervising local associations through eleven field committees, a staff of 135 headquarters and field secretaries promote such specialized activities as: Visiting and teaching immigrant women and girls; benefiting farm girls through county associations; helping young business women by vocational guidance; summer camps, etc.; establishing clubhouses for nurses and art students; offering opportunities to Indian and colored students; and interesting leisured women and college alumnæ in philanthropic and religious work. Through a staff of 67 American secretaries abroad, the board extends its work to India, China, Japan, South America, and Turkey. In 1917, provision was made for 18 city, student, and county conferences, 6 industrial and 3 high school councils, in which 7202 young women were given ten days of rest, recreation, and religious instruction.

Immediately following the entry of the United States into the war the Young Women's Christian Association appointed a war council, and entered upon an active campaign in the interests of girls and women in the war. Features of this work are the erection of hostess houses in the army camps throughout the country; emergency housing for girls employed in military and industrial centres; a Patriotic League for younger girls; club and recreation centres for colored and white women; work with foreign-born women in the United States and a bureau of social morality speakers; enrolling over 100 prominent physicians; the institution of industrial clubs for the women of France and Russia; and the organization of social centres for American nurses in France. A war fund of $5,000,000 was raised in 1917-18.

YUKON. A terrtitory of Canada. It is bounded by Alaska on the west and the Northwest Territories on the east, and extends from British Columbia, at the 60th parallel, to the Arctic Ocean. The estimated area is 206,427 miles, of which 649 water. The population at the 1911 census was 8512, as compared with 27,219 in 1901. The capital is Dawson; it had 9142 inhabitants in 1901 and 3013 in 1911. Yukon is governed by a commissioner and a legislative council of 10 members elected for three years. Commissioner, George Norris Williams, appointed September 25, 1915.

ZAMENHOF, LUDWIG. A Russian philologist, inventor of Esperanto, died in Warsaw, April 15, 1917; born in Bielostok in 1856. His first communication on the subject of an international language was signed "Dr. Esperanto," that is "Dr. Hopeful," and from this came the name. His proposals in general were so reasonable and simple that the new language attracted many adherents, who hoped chiefly that it would result in a better understanding among nations and so in the attainment of world peace. Esperanto succeeded Volapük in its field, and, while it has met much opposition, it has demonstrated the possibilities for an auxiliary international tongue. Dr. Zamenhof visited the United States in 1910 to attend an Esperanto Congress.

ZANZIBAR. A British insular protectorate off the coast of German East Africa. It consists of Zanzibar Island (640 square miles), Pemba Island (380 square miles), and several islets. Population, about 199,000, mostly Mohammedan.

ZEPPELIN, FREDERICK A. A. H., Count VON. A German soldier and airship builder, died at Charlottenburg, Prussia, March 8, 1917. He was born July 8, 1838, on an island in the Lake of Constance. His father, Count Friedrich von Zeppelin, was a Württemberg court official and his mother was descended from an old French refugee family. He studied at the Stuttgart Polytechnicum, the Ludwigsburg Military Academy, and the University of Tübingen, and entered eagerly upon the life of a soldier. With the rank of lieutenant, Count Zeppelin was sent to the United States in 1863 to be a military observer on the Union side in the Civil War, and he served with the Army of the Potomac. His first balloon ascension, made at St. Paul, Minn., convinced him of the importance of aircraft in war, for scouting purposes. After his return, he fought for Württemberg against Prussia in the Seven Weeks' War of 1866, and, in 1870-71, he distinguished himself in the Franco-Prussian War, on the Prussian side. He was one of a group of young officers who crossed the boundary shortly after war was declared and, eluding the patrols, penetrated far into Alsace. They were surprised by the enemy, but Zeppelin escaped with important information. Later he became plenipotentiary of Württemberg at Berlin, and representative in the federal council of the empire. At 53, as lieutenant general, he retired to devote himself wholly to what had been his hobby for some years, the construction of a large dirigible balloon.

It was almost 20 years later that, after failures enough to have discouraged most men, he was hailed by the kaiser as "the greatest German of the twentieth century." He made himself a mechanical expert so as to be able to carry out his plans, and neither technical difficulties, catastrophes, the gradual diminution of his personal fortune, nor ridicule could stop him. Long before Germany was ready to give him encouragement, governments of other nations tried to secure his services, but he preferred to save his talents for the Fatherland. At last he was reduced to living in a small cottage, and to dependence on loyal friends for his support. In most quarters he was regarded as a "crank." In 1900 he was enabled to make his first ascent from Friedrichshafen with the type of airship which has since been associated with his name—a great cigar-shaped frame of rigid construction, enclosing some 17 balloon compartments filled with hydrogen gas, steering rudders, and a suspended gondola containing the motors, with space for operators and passengers. A Frenchman has been credited with inventing the rigid frame, but Zeppelin gave it successful embodiment, and eventually the Germans were about the only champions of this type of construction. The first Zeppelin was wrecked on its third trial in descending to its harbor on Lake Constance, and much the same fate happened to one after another of its successors. Each disaster was credited to a different cause, but sudden gusts of wind did most damage to the unwieldy craft. Up to the beginning of 1914, 13 Zeppelins had been destroyed. In 1908, during a government test, after traveling 380 miles within less than 24 hours, and with only 70 miles to go, the machine had to descend for repairs and suddenly caught fire and was destroyed. At that time each such loss represented some $500,000. The people came to the inventor's rescue with a popular subscription that brought him three times that sum. The next Zeppelin covered 690 miles in 38 hours, and in 1909 a trip of 1000 miles was made.

The "L-I," the first naval Zeppelin, 525 feet long, 50 feet in diameter, and with a speed of 52 miles an hour, was launched in 1912 and taken by the count from Friedrichshafen to Johannisthal in 32 hours. It was the first to carry wireless equipment. On a later trip, in 1913, it was destroyed off Heligoland with a loss of 15 lives. The "L-II" exploded 900 feet above the Johannisthal aviation field, killing 27 men, among them several prominent naval officers. Despite foreign criticism of the Zeppelin as a mechanical monstrosity, the German government and people clung to their faith in it. Before the European War there were airship harbors in many German cities, and the chief shops at Friedrichshafen, capable of producing two or three machines a month, were supplemented by great factories elsewhere. During the war the Zeppelins were used chiefly for raids, such as those on the English towns. To meet enemy aëroplanes, the Germans found they had to have aëroplanes themselves. The failure of his airships as engines of war is said to have grieved Count Zeppelin greatly. Thirty-nine of them were reported destroyed in battle up to May 15, 1917. Zeppelin trained his son as a builder of dirigibles, and his daughter also became a skillful aëronaut. His wife was a Russian baroness, Isabella von Wolff, who came from the German-speaking province of Livonia. Consult F. A. Talbot, *Aëroplanes and Dirigibles of War* (London, 1915), and R. P. Hearne, *Zeppelins and Super-Zeppelins* (New York, 1916).

ZEPPELIN AIRSHIP. See Aëronautics; Military Progress.

ZINC. The zinc-mining and zinc-smelting industries started the year 1917 with every prospect of prosperity, although the price of spelter was below the average of the preceding year. During the last half of the year both the zinc smelters and zinc miners were claiming that their operations were unprofitable because of the high general prices and the low price of spelter. In consequence, a large part of the smelting capacity of the country was idle at the close of the year and there was a notable curtailment of output during the last quarter. According to the best information available, the recoverable zinc content of ore mined in the United States in 1917 was about 690,000 short tons, compared with 702,610 tons in 1916, and 605,915 tons in 1915.

The production of spelter from domestic ore in 1917 is estimated at 574,994 short tons, worth, at the average St. Louis spot quotation, about $102,350,000, and the production from foreign ore at 92,757 tons, a total of 667,751 tons, worth $118,860,000, compared to a total of 667,456 tons in 1916, worth $178,878,000, at the average St. Louis selling price. This indicated practically the same production as in 1916, but a loss of more than $60,000,000 in value. Included in the output is 28,175 tons of electrolytic spelter, of which a part was refined by electrolysis from prime western spelter. This was the product of five plants. The quantity of zinc dust prepared for market was over 7000 tons. The output of secondary spelter redistilled at regular smelters and at the smelters with large retorts was about 21,600 tons.

Primary spelter was produced during the first half of the year at the rate of 722,000 tons a year, during the third quarter at the rate of 626,000 tons a year, and during the fourth quarter at the rate of 600,000 tons a year.

Imports and Exports. The imports of spelter (mostly scrap) are estimated at 270 short tons, valued at about $25,000, compared with 684 tons in 1916. Zinc dust was imported to the amount of 380 tons, worth $90,000. The imports of zinc ore in 1917 were approximately 215,000 short tons, containing about 75,600 tons of zinc and worth about $4,550,000, compared with 385,964 tons of ore, containing 148,147 tons of zinc, in 1916. The exports of spelter and sheets made from domestic ore are estimated at 144,000 short tons, worth $37,000,000, compared with 163,137 tons, worth $51,312,990, in 1916. The exports of spelter made from foreign ore are estimated at 60,000, valued at $11,900,000, compared with 43,230 tons in 1916. The exports of zinc manufactures fell off to $400,000 in 1917 from $572,286 in 1916. The exports of brass are estimated at 169,000 tons, valued at $104,300,000, compared with 122,466 tons, worth $72,683,626, in 1916. Manufactures of brass were exported to the value of about $134,500,000, compared with $241,668,081 in 1916. The value of loaded cartridges exported in 1917 was about $41,000,000, against $55,103,904 in 1916.

ZIONISM. See Jews and Judaism.

ZOÖLOGY. The war seemed not to have interfered in any way with zoölogical research in America, and the usual number of papers along anatomical and experimental lines were published. Publications in France and England were somewhat fewer than usual, while the standard zoölogical journals from Germany did not reach the United States at all. In the summary here given, only results of general interest are mentioned, and the files of the various journals should be consulted for the more technical papers. The American Society of Zoologists and the American Association for the Advancement of Science with its section for zoölogy met during the Christmas holidays in Minneapolis and in Pittsburgh respectively.

Evolution. Osborn in *The Origin and Evolution of Life* developed an "energy concept" of evolution. "The evolution of life may be rewritten in terms of invisible energy as it has long been written in terms of visible force." "In each organism the phenomena of life represent the action, reaction, and interaction of four complexes of physico-chemical energy, viz.

(1) the inorganic environment; (2) the developing organism; (3) the germ or heredity chromatin; (4) the life environment. His central theory is that every physico-chemical action and reaction concerned in the transformation, conservation, and dissipation of energy produces also a physico-chemical agent of interaction which permeates and more or less affects the organism as a whole. Groups of tissues and organs are one after the other brought into existence for the capture, storage, and transformation of energy. The hormones are the agents in interactions within the organism. Selection operates only after structures appear.

The *mutationists* state that evolution is never through the accumulation of slight steps, but through the sudden appearance of variations which are discontinuous with anything which preceded them; the *selectionists* claim that by selection of slight variations considerable end differences may result. Jennings, quoting from the results of work on *Drosophila* (see Year Book for 1915 and 1916), showed that even the most extreme believers in the mutation theory have given evidence in favor of the opposite theory. Bridge's work on the eye color of *Drosophila* has shown that seven color gradations exist between white and red, and in the case of one of these, seven modifying factors for one color. These, Jennings argued, are really the alterations in the hereditary constitution which the selectionist demands, and thus the real distinction between the two schools disappears. Morgan, in reply to Jennings, admitted that some mutations are so small in amount as to appear like fluctuations, but claimed that such extreme variations as from red to white (which may appear in one generation) show that mutations do occur and that the other changes are really mutations differing only in degree from the first.

Osborn and others have claimed that paleontological evidence indicates that evolution has been in one direct line, and not by the selection of certain variations instead of others. Jennings showed that certain so-called "varieties" described by Osborn as merely non-heritable modifications are really what we would find if there had been indefinite variation, and that so far as this goes the paleontological evidence does not negative the idea of evolution through selection of favorable variations.

Crampton published the first volume of an elaborate *Study on the Variation, Distribution, and Evolution of the Genus Partula on the Island of Tahiti*, giving a statistical treatment of the subject in such form as to be valuable for a later discussion of the evolution of this group.

In evolutionary discussions, much use has been made of the process of artificial selection by breeders as bearing on the question of natural selection. Pearl, in his address as president of the American Society of Naturalists, stated that when practical breeders use the term selection, they really mean an elaborate process of crossing of varieties and combinations of old characters so that there is here no real selection. He was skeptical as to the value of selection, since it is always based on somatic characters and may not select the best germ plasm, which is the really important substance in evolution.

Lotsy argued that evolution is always by means of hybridization. Variations come in only through crossing, and this is true for extinct as well as for recent forms. He did not make clear how the divergent varieties first came into existence.

Heredity. In the Year Book for 1915 was mentioned a crossing over theory to explain certain observed facts in the heredity of *Drosophila*, this being dependent on the reality of the "chiasma type" of the synapsis of the chromosomes. The fact that this type does not occur in all cases where the crossing over appears was made the basis of a criticism of the crossing over theory and Goldschmidt attempted to show that the assumption of certain "forces" which are connected with chromosomes, perhaps absorbed by them, and which are quantitatively variable, is sufficient to explain crossing over without recourse to the chiasma type. These forces he suggested might be of the nature of enzymes. Sturtevant, whose earlier papers were made the basis of Goldschmidt's criticism, claimed in reply, that Goldschmidt had not taken into consideration later papers in which some earlier difficulties had been cleared up, and that Goldschmidt's theoretical illustrations on which he based his argument, did not really accord with the facts.

Work on heredity in mice has thus far failed to produce a homozygous yellow mouse, and Kirkhan reported the discovery of disintegrating embryos in mice, indicating that something connected with the factor for yellow prevented the development of the individual. Little, citing this observation, pointed out that it indicated that the effect of the yellow factor (if this explanation is correct) is shown long before any color appears, so that the factor may have different functions at different stages in the ontogeny. A similar condition exists in a "black-eyed white" factor. Ibsen and Steiglider studied further this yellow-yellow mating in mice. They gave evidence to show that the homozygous yellow gametes are really formed, but that they fail to develop normally after implantation. They suggest that possibly a lethal factor such as has been described in *Drosophila*, may also exist here.

Davenport reported observations on the heredity of stature in man, which indicated that variations may arise through differences in the time of puberty, this seeming to exercise an inhibiting effect on growth. Offspring of tall parents are less variable and show less tendency to revert to mediocrity than when the parents are below mediocrity. It is possible that the factors for tallness are recessive.

Foot and Strobell studied inheritance of the form of the intermittent organ in the insects *Euschistus variolarius* and *E. icterus* with especial reference to the chromosomal theory of heredity. They got no evidence for a Mendelian form of inheritance in these animals, and from this drew the conclusion that there is no evidence for a transmission of sex or other characters through definite chromosomes, as has been claimed by Wilson, Morgan, and their students.

Hargitt studied the formation of sex cells in a medusa, *Hybocodon*, where several generations of medusæ formed by budding may intervene between two sexually produced ones, and was unable to find any trace of a continuity of the germ cell material, as was assumed by Weismann in his theories of heredity.

In the YEAR BOOK for 1916 were given results obtained by Stockard with guinea pigs, which indicated that the effect of alcoholic poisoning were very markedly injurious to later generations. Pearl conducted similar experiments on fowls, and found that no especially injurious results could be detected. There was a decrease in the fertility, but on the other hand, an increase in the vigor of the offspring actually produced. Nice found that mice do not show that they are affected injuriously by alcohol. He suggests that this resistance may be correlated with their well known lack of susceptibility to disease germs.

GENERAL. Harvey studied the chemistry of light production in a number of animals and in bacteria. In most cases he thought he could isolate from the luminous material two substances to which he gave the name *photogenin* and *photophelein*, the former being a colloid and the latter a crystalloid. Luminescence is the product of the action of one of these on the other, the process being something like an enzyme action, but differing in that both substances are used up in the process. In *Cypridina*, a crustacean, he found that photogenin is formed in a special gland, while the other compound may occur in other parts of the body or in other organisms as well. In a number of cases he was not able to separate these substances, but thought that this was because the two were present in equivalent amounts. DuBois, who had earlier used the terms *luciferine* and *luciferase* for the components of luminescent compounds, stated that in adopting his general theory with a change of nomenclature Harvey had not fully understood his position.

Laurens studied the reactions of the melanophores in the skin of amphibian larvæ, both those that could see and those that were blinded. The reactions are alike in the two, the melanophores expanding in the light and contracting in the dark. Normal animals kept for three to five days in either light or darkness gave the opposite result, indicating that long-continued stimuli on the nervous system through the retina caused a reversal of the reaction. This reversal did not occur in blinded larvæ. Laurens could not discover that the parietal organ governs in any way the melanophores, but McCord and Allen found that feeding parietal organ tissue to tadpoles was followed by a very decided lightening of the whole animal. An acetone solution of this parietal material will, if injected into the body, or even if absorbed by the gills, give the same result.

Laurens stated that the general function of the melanophores is to contract in darkness and expand in the light, but that under the influence of the nervous system, due to environmental conditions, psychic factors, etc., the opposite results may follow. The reaction is probably an adaptive one, though the subject is complicated by the fact that the melanophores of different animals do not react in the same way. Cole and Dean found that the tadpoles of a species of frog would respond definitely to light stimulation, the skin of the tail being the most sensitive part. They thought that this is a response to a nerve stimulation, and not a direct response to the light reaching the melanophores.

A perennial question in zoölogy is the meaning of the coloration of animals, especially concerning the significance of brilliant colors. These have been called "warning" where they are associated with distasteful or unpleasant characters, and Reighard (see YEAR BOOK for 1909, article BIOLOGY) has applied the term "immunity coloration" for cases like the reef fishes of the tropics, where brilliant coloration is not associated with any such unpleasant features. He supposed that being protected by their mode of life among the rocks the fishes who chanced to develop bright colors would not be eliminated by their enemies, and thus the brilliant colors would be preserved. The subject has been re-investigated by Longley, who worked in the same locality as did Reighard, and who has decided as a result of several years of observation on the reef fishes, that they are really protected by their colors, which appear so conspicuous when the animal is taken from its natural environment. Observations made by the help of a diving helmet where the observer is at a level with the fishes show that to the human eye, and presumably to the eye of the fish the colors really blend with the background. Longley found that many fish are countershaded and thus protected in the manner emphasized by Thayer (see YEAR BOOK for 1909, article BIOLOGY), and especially defended types are not unlike others in pigmentation. All of these fish have more or less ability to change color under different environments, and the red fishes which would be so very conspicuous in the daylight remain hidden at this time, coming out only at night, when this color blends perfectly with their background. These observations lend no support to theories of warning and immunity coloration, nor to sexual selection, signal, and recognition marks. His conclusion was that natural selection was the only explanation which can be offered for these colors. On the other hand, Crozier, working in Bermuda with the brilliantly colored nudibranch, *Chromodoris*, determined that the animal was protected by an unpleasant taste and odor, the latter seeming to act as a repellent when the animal was enclosed in a bag and thus its colors made invisible. This, he decided, supports the immunity coloration explanation for the origin of the colors.

Another perennial problem in zoölogy is the time and method of sex determination in the developing embryo. In some insects it seems to be definitely proved that the sex is determined at the time of fertilization of the egg, for fertilized eggs develop into females, unfertilized ones into males. Similar conclusions follow from the conditions in insects where one egg develops into many larvæ, these usually being all of the same sex. Patterson, however, has described the conditions existing in *Paracopidosomopsis*, an insect whose young are parasitic on the egg of the cabbage butterfly *Autographra brassicæ*. Here the number of mixed broods, containing, that is, both males and females, is greater than the number of single sexed ones. Since the count was made from the number of the parasitic insects which emerge from the host, it might be that more than one egg had been laid in it, but Patterson thought this explanation was inadequate. His final explanation was based on the possibility of a non-disjunction of the sex chromosomes (see YEAR BOOK for 1916) in such a way that the X chromosomes which are the sex determiners are not "disjoined" during the cleavage stages. Thus, either males or females might appear. Further evidence for this conclusion is that in some cases asexual larvæ appear, indicating that the X chromosome had been lost entirely in their formation.

Goldschmidt, as a result of work on gypsy moths, thinks that there are two factors involved in sex determination, working simultaneously and independently in each sex, one carried in the sex chromosome, the other inherited maternally, probably carried in the cytoplasm of the egg. Certain crosses of the gypsy moth give a complete series of individuals showing all possible gradations of structure from the male to the female condition. He concluded that the observations could be explained on the assumption of two enzymes *gynase* and *andrase* which would, if working alone, give rise to female and male individuals respectively. Both are present in the fertilized egg, the gynase being in such constant concentration that it is higher than one portion of andrase and lower than two. If the former condition holds, a female results and if the latter a male. Where intersexuality occurs it means that one of these enzymes has become exhausted in the production of a certain organ, and that then the effects of the other become manifest. Thus a gradation between male and female conditions occurs. The first formed organs will thus be of one sex, while later ones will be of the other. He thinks that these enzymes are attached to—adsorbed by—the chromosomes, and that this fact explains the rôle of the chromosomes in sex heredity.

Whitney had stated that the feeding of rotifers with green algæ would increase the number of male producing females, but his conclusions were combated by Shull (see YEAR BOOK for 1916), who thought that the effect would follow on the increased production of oxygen in the water formed by the alga and not on the alga itself as food. Whitney repeated his experiments and showed that the same result follows if the animals are kept in the dark while feeding with the alga, thus where no oxygen can be given off. He admits that oxygen may affect the female, causing her to produce male producing offspring, but thinks that where this occurs it is an indirect effect, working through the development of bacteria and protozoa and not any direct effect of the oxygen.

In *Crepidula*, which is a protandric hermaphrodite, Gould stated that the assumption of the male condition is dependent on external factors. If the larva settles where there is no larger individual, it does not assume the male phase, but it will do so if there is a larger individual near, and this may be either male or female. Neither movement nor feeding furnishes the stimulus for male development, which seems to be entirely dependent on the presence of a larger individual. No cause for this result was given, though it was shown to be of advantage to the race, for since the male changes into the female phase as soon as the female is fertilized, this insures that there will always be a male ready to fertilize the female, and that as soon as the fertilization is accomplished the individual changes into an egg producing female.

The question of the mechanism of sex differentiation in mammals was attacked by Lillie in a study of the "free martin" in cattle. This is a condition where twin offspring of different sexes are born, and in such cases it usually happens that the female is sterile. Lillie's observations led to the conclusion that these two embryos came from different ova, and that each independently forms an embryonic chorion. Later there is, in many cases, a complete anastomosis of the blood vessels of the two chorions, as was demonstrated by injecting the arteries and veins, when it appeared that either could be injected from the other. The testes of the male individual develop earlier than the ovaries of the female, and Lillie concluded that hormones arising in these developing testes react in such a way on the organs of the other individual that although the external sexual features are female, the internal female structures do not develop, the embryonic tissue which would form them differentiating along male lines. The general surface similarity to male organs was confirmed by a histological study of these organs, made by Chapin. Lillie showed that this sterility does not occur in sheep, where observation showed that there is no anastomosis between the blood vessels of the twins.

Riddle (see YEAR BOOK for 1916) repeated his conviction that while a definite chromosomal composition accompanies sex determination, it is only a sign or index, sex determination being entirely a matter of metabolism. Femaleness in the egg is marked by low metabolism, lower per cent of water, and higher total fat and phosphorus, maleness being accompanied by exactly the opposite of each of these. These distinctions in the egg are carried into the adult, and he thinks that he gets evidence for this latter statement from analyses of blood especially in fowls and man, where the above mentioned sex differences appear, and in researches by Benedict and Emmes which demonstrate that the metabolism is 5 to 6 per cent greater in man than in woman. The experiments of Goldschmidt (see above) show that it is possible to get sex intergrades, and these are hard to explain on any Mendelian theory, but easy to understand if sex is determined by metabolism. In Riddle's opinion, any influence acting on the young animal in such a way as to modify its metabolism, will produce a corresponding change of sex.

Observations by Shull seemed to indicate that the manner of sex determination may vary in closely related animals. In the insect *Anthothrips verbasci*, conditions seem to be very like those of the bee, where an egg is male or female, according to whether it is unfertilized or fertilized. In *Thrips tabaci* and in *Anaphothrips striatus* males are often very rare, which is difficult to explain on the above hypothesis, for if absent at one egg laying all of the eggs would develop into males, and thus these would be abundant in the next generation, but since this does not occur, the males must arise as in aphids, probably through some maturation changes.

Schaeffer continued experiments on the reactions of *Amœba* (see YEAR BOOK for 1916). He decided that Amœba will respond to (will "sense") beams of light 20 microns in diameter at a distance of 100 to 150 microns, and that it will also "sense" beams of darkness before it comes very near them. It usually avoids the latter stimulus, though it may be a positive, negative, or indifferent in its reactions according to circumstances. Amœba will respond to stimuli reaching it from albumens in the water, though he thought that this response was due to stimuli coming from soluble impurities in the albumens. If absolutely insoluble, proteids might not be injected. Whenever possible, an amœba will utilize the remains of an old pseudopodium rather than form a new one. Mast, working on *Didinium*, came to the conclusion that in these animals encystment is not followed by an increase in the rate of fission, seeming rather to be due to unfavorable environmental conditions. Neither could he discover that conjugation had any appreciable effect on the death rate, the fission rate, or any variation in the latter rate, thus leading to the conclusion that neither conjugation nor encystment has any rejuvenating effect. Animals about to conjugate tend to aggregate, this probably being due to some chemical reactions set up by the aggregating individuals.

Woodruff and Erdmann (see Year Books for 1914 and 1916) described as "endomixis" a process of nuclear reconstructions in *Paramœcium*. To meet the criticism that this might have been due to long continued cultivation under laboratory conditions, they have observed material from various localities, collecting from Germany, from Ohio, and from Woods Hole and Williamstown in Massachusetts. In all of these specimens the same phenomenon could be seen. Hadley continued his studies on *Trichomonas* which has been identified as the cause of the disease "blackhead" in turkeys. This normally occurs in the intestine of the animals as a commensal, but under certain conditions it may penetrate the wall of the intestine, causing fatal lesions not only in the wall of the intestine but in the liver as well. The parasite is not affected by being swallowed by phagocytes, but carries on normal reproductive processes inside these cells. There are apparently two different forms, but Hadley thought these were merely two different phases dependent on food conditions. Since the parasite is always in the intestine legislation intended to prevent the spread of the disease has little value. Infection is caused by individuals of the commensal passing from the intestine and being taken up by other birds.

Hance reported the discovery of a race of *Paramœcium* with two contractile vacuoles. Vorhies announced the discovery of *Amœba* and some ciliates in Great Salt Lake, Utah, this being the first time these animals have been reported from brine lakes. Parker described the locomotion of actinians. This is produced by a continuous creep something like the movement of gasteropods, caused by a contraction wave passing over the foot. There is usually only one wave, but there may be more. There is in addition a slimy secretion which holds the animal to the substratum. The direction of this locomotion has no reference to the axes of the body. Cary showed that in the coral reefs of Samoa the gorgonian corals are more important than the stony in reef production, and observations by Mayer in the same locality showed that land waters do not have a solvent effect on coral rock, as was inferred in the solution theories of atoll formation.

Wulzen described the reaction of Planarians to meat juices. There is a double response in this case, one by the pharynx and one by the whole animal, the latter under usual conditions acting as an inhibitor of the former. If the anterior region of the body be cut away the pharynx reaction is more pronounced and a pharynx removed from the body will react to food in a normal fashion.

Crozier found that the land nemertean, *Geonemertes*, in Bermuda, occurs in the water down to below low water mark, and decided that its habits indicate that the land nemerteans are descended from salt water forms. Cobb described a new nematode, *Tylenchus penetrans*, which infests the roots of a number of plants, the most important economically being the potato, where it attacks the tuber. It is a dangerous parasite, for it cannot easily be killed even by immersion in corrosive sublimate, and once in the soil will attach itself to other plant roots, thus making eradication impossible. Stewart stated that *Ascaris lumbricoides* is a very dangerous parasite of man in Hong Kong, the intermediate host being rats or mice. From the intestine of the rodent they pass into the liver, from here into blood vessels, and are found in the bronchi on the seventh day after infection. From here they get to the food of man. Rabaud reported to the French Academy that experiments on stinging hymenoptera showed that when they sting other insects they do not necessarily pierce a ganglion. Also he saw one stinging spider and in this case the sting was inserted near the end of the abdomen, thus a long way from the ganglion. Paralysis and death followed, however, in characteristic fashion. Lecaillon found "accidental" bivoltins in an unvoltin race of silkworms, and thought he could detect chemical differences between the eggs of the two races. He thought that environmental conditions tend to exaggerate these differences and thus bring on bivoltinism. He also found in silk worms that both sexes develop from parthenogenetic eggs. Boulenger found in the mouth of a fish, *Barbus*, from Lake Tanyanika, a series of little tooth-like prominences developed in the ectoderm, which are apparently similar to ectodermal thickenings found on other parts of the body of other fish. They appear only in the male and at the breeding season. Their position in the mouth is, however, unique. D'Arcy Thompson found that *Chimœra monstrosa* spawns off the Norwegian coast in winter and in deep water in warmer weather. Mrs. Wilder reported that in the amphibian *Desmognathus fusca* the incubation period apparently depends on temperature, but lasted in one lot about eight weeks. The internal fertilization of the eggs and their protection by the mother insures that a relatively high proportion of individuals reach maturity. The expedition of the American Museum of Natural History to Nicaragua secured 1500 fishes and 2000 reptiles. This is of especial interest as being the first reptile collection made from this locality.

Oecological studies made at the University of Illinois indicated that the distribution of the ground living mammals as e. g. the white footed rat, is determined by the rate of evaporation, and therefore the moisture, while in California Grinnell thought that temperature is the most important, though not the sole factor. Hegner described a "singing mouse" caught at Ann Arbor, Mich. The song was described as a rapid whole toned trill involving the notes c and d. Earlier explanations of this phenomenon supposed that it was due either to pregnancy or to disease, but Hegner was unable to discover that either explanation would apply in this case.

Hornaday reported that the largest collection of rare species of mammals, birds, and reptiles that ever came to America was brought in in July, some having been bought by the New York Zoölogical Society and some by the Philadelphia Society. The animals were collected in Australia. See also ORNITHOLOGY; ENTOMOLOGY; FISH AND FISHERIES.

ZULULAND. A territory of Natal. See SOUTH AFRICA, UNION OF.

ZUNI. See ANTHROPOLOGY.

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